

School of Medicine 1992-1993



THE OATH OF HIPPOCRATES

I do solemnly swear by that which I hold most sacred that I will be loyal to the profession of medicine and just and generous to its members. That I will lead my life and practice my art in uprightness and honor. That into whatsoever house I shall enter it shall be for the good of the sick to the utmost of my power. I hold myself aloof from wrong, from corruption, from the tempting of others to vice. That I will exercise my art solely for the cure of my patients, and will give no drug, perform no operation for a criminal purpose even if solicited, far less suggest it. That whatsoever I shall see or hear of the lives of men which is not fitting to be spoken, I will keep inviolably secret. These things I do promise and in proportion as I am faithful to this my oath, may happiness and good repute be ever mine; the opposite if I shall be forsworn.

The University of Maryland is accredited by the Middle States Association of Colleges and Secondary Schools and is a member of the Association of American Universities. The School of Medicine is accredited by the Liaison Committee on Medical Education, the accrediting body for the Association of American Medical Colleges and the American Medical Association.



UNIVERSITY OF MARYLAND
AT BALTIMORE

SCHOOL OF MEDICINE

University of Maryland at Baltimore
655 West Baltimore Street
Baltimore, Maryland 21201-1559

Admissions Office: 410-706-7478

The University of Maryland is an equal opportunity institution with respect to both education and employment. The university's policies, programs and activities are in conformance with pertinent federal and state laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, sex and handicap.

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Profile

Established in 1807, the University of Maryland School of Medicine is the fifth oldest medical school in the United States and the first to institute a residency training program. An integral part of the 11-campus University of Maryland System, the School of Medicine was the founding school of the University of Maryland. Today the School of Medicine serves as foundation of a large academic health center that combines medical education, biomedical research, patient care and service to the community. While its traditional excellence remains constant, the School of Medicine and its national reputation continue to grow.

The School of Medicine boasts the oldest building in the Western hemisphere in continuous use for medical education, the meticulously restored Davidge Hall, which was built in 1812. Two major classroom and laboratory buildings, the 14-floor Bressler Research Building and the nine-floor Medical School Teaching Facility, were completed within the past 15 years. The mid-rise, three-floor Biomedical Research Facility will be completed in late 1992 providing an additional 32,500 net square feet of space. On the drawing board is the Health Sciences Facility, a new research and teaching facility slated for completion in 1995.

The University of Maryland at Baltimore Campus continues to expand as well. The new Veterans Administration Medical Hospital will open in the fall of 1992. A new patient tower for the University of Maryland Medical System will be completed in 1994 and a new facility to house the Health Sciences Library is in the planning stage.

MILESTONES

The foundations of the School of Medicine date back to 1789, when Baltimore physicians organized the Medical Society of Baltimore in an effort to train young physicians to succeed them. Following the Revolutionary War their numbers had been greatly diminished and they wanted to prevent charlatans from practicing in the area. Members of the Medical Society began to train prospective physicians in their homes, lecturing on anatomy, surgery and chemistry. They soon petitioned the Maryland State Legislature to establish a college of medicine on a firm basis and under the protection of the law.

This request was approved on January 20, 1807, together with permission to hold a lottery to raise money for a home for the fledgling "College of Medicine in Maryland."

Dr. John Beale Davidge, a native Marylander and physician who had trained in Scotland, became dean and took the chair in surgery. His founding faculty were James Cocke (anatomy and physiology), James Shaw (chemistry) and Nathaniel Potter (theory and practice of medicine). From John Eager Howard, a Revolutionary War hero and former Maryland governor, Davidge, Shaw and Cocke bought land that was "quite some distance from town" to protect against

unruly mobs who had demolished the doctors' first anatomical theater in violent opposition to the dissection of human cadavers. From the beginning, there was a strong emphasis on bedside teaching. The first class of seven received clinical instruction at the Baltimore Almshouse, a workhouse and infirmary for the poor.



Davidge Hall was designed by Robert Carey Long, Sr. and modeled after the Pantheon in Rome. It was completed in 1812 and meticulously renovated in the early 1980s. In addition to the building's two expansive circular amphitheaters, one atop the other, there are dissecting cubbyholes, secret stairways and hidden exits that afforded early students and their professors safe passage from angry mobs.

In 1823, the Baltimore Infirmary, forerunner of the University of Maryland Hospital, was built opposite Davidge Hall on the site of the present Baltimore Student Union. It was the first hospital founded by a medical school for the express purpose of clinical instruction, and the site of the first intramural residency program in the United States. Senior medical students lived in the hospital while helping to care for patients. The building was still in active use until 1973, when the clinics located there were moved into the new addition of the University of Maryland Hospital.

In curriculum development, the School of Medicine claims a long and proud tradition as an innovative leader. Maryland was the first to recognize the value of the basic sciences, and in 1833 introduced the first preventive medicine course. In 1800, Dr. John Crawford, whose personal library became the nucleus of the medical library, was the first to vaccinate Baltimoreans against smallpox. As early as 1810 he had presented evidence of the contagious character of tuberculosis.

The techniques of auscultation and percussion were taught at the School of Medicine for the first time in Baltimore as early as 1841, and in 1844 Dr. David Stewart, the first professor of pharmacy in the United States, initiated his lectures at Maryland. In 1848 Maryland became the first school to require

anatomical dissection, followed six years later by the introduction of compulsory courses in gross and microscopic pathology. After another six years, compulsory courses in experimental physiology and microscopy were introduced. A milestone in cancer research occurred in 1853, when Maryland's Dr. Francis Donaldson became the first person in America to advocate biopsy and microscopic diagnosis of malignancy. Maryland was the first to establish chairs in the diseases of women and children (1867) and diseases of the eye and ear (1873).

Mergers with the Baltimore Medical College in 1913 and the College of Physicians and Surgeons in 1915 gained greatly expanded clinical facilities and faculty for the School of Medicine. Early in the twentieth century, Drs. James Rowland and Louis Douglas initiated off-site obstetrical care and home delivery, prenatal clinics and an Rh blood typing laboratory, significantly improving infant and maternal health.



The School of Medicine has had its share of medical breakthroughs, including in more recent decades discovery of the thyrotropic hormone, the first successful antibiotic treatment of Rocky Mountain spotted fever, the first specific cure for typhoid fever and the successful treatment of diabetic keto-acidosis with low dose insulin. The Shock Trauma Center, which opened in 1961, serves as a worldwide model for emergency medical treatment. In 1967 the school began one of the first formalized residency programs in family practice.

The rest, of course, is not yet history, but certainly history in the making.

EDUCATION

In the traditional undergraduate curriculum, medical students concentrate on basic sciences for two years, then begin to apply this knowledge to clinical settings. Ample allowance is made for electives, independent study and special

research projects. Throughout the four years, each student has a basic science and a clinical faculty advisor.

The ties between the medical school and the hospital enrich both medical education and health care. All physicians practicing at the University of Maryland Medical System and the Medical Faculty Foundation Professional Building have School of Medicine faculty appointments and are actively involved in the educational process in addition to supervising residency training for more than 600 postgraduate positions at the University Hospital and affiliated hospitals. The Medical System includes a 747-bed teaching hospital, Cancer Center and R Adams Cowley Shock Trauma Center on campus, as well as the Montebello Rehabilitation Center and the James Lawrence Kernan Hospital off campus.



Medical care and education are further enhanced by the relocation of the Baltimore Veterans Administration Medical Center to this campus in a new state-of-the-art hospital opening this year adjacent to the School of Medicine and the University of Maryland Medical System. Together, these facilities serve as the major clinical training sites as well as a source of comprehensive health care for the local community and the state. The school also has established clinical affiliations throughout the region, giving students unusual flexibility in clinical experiences.

In an effort to nurture more interest in basic research and to meet the increasing demand for physician-scientists, the school offers a combined MD/PhD program in 10 medical disciplines and an MD/MS program in preventive medicine. Although the schedule can be flexible, MD/PhD students typically complete the freshman and sophomore years of medical school, enroll as graduate students for approximately two years, and then begin their clinical clerkships.

Medical students in the track leading to the MD/MS in preventive medicine may complete the dual degree program in four, or more typically, five years. The fifth year is counted fully as one year of preventive medicine residency training by the American Board of Preventive Medicine.

Graduate programs are offered at the master's and doctoral levels in the basic sciences. There is a baccalaureate program in medical and research technology and a master's program in physical therapy as well as a number of interdisciplinary programs with both service and research components. Continuing education programs are sponsored for practicing physicians.

The School of Medicine offers students an excellent spectrum of resources and field experiences. Located along the Baltimore-Washington corridor, the school is in the midst of a great concentration of health care institutions, research centers, government agencies and professional associations. The University of Maryland Medical System is the school's primary training site for both medical students and residents. In addition, students and residents are also trained through the network of Baltimore metropolitan hospitals and the Baltimore Veterans Administration Medical Center which are affiliated with the School of Medicine.



RESEARCH

Ranked among the top public medical schools in NIH research support, the level of research funding for the School of Medicine has risen dramatically in recent years in contrast to a leveling national trend in grant support. In FY 90 the School of Medicine ranked #1 in percentage increase in NIH funding among all state supported medical schools and #2 among all schools. In 1990-91 the School of Medicine's grant and contract support totaled \$77,493,739. Strong multi-departmental investigations in hypertension, genetics, pharmacology, neurobiology

and immunology place this institution at the forefront of biomedical research. Major awards illustrate the strength and scope of the research environment at this institution.

■ **AIDS Risk Prevention in Inner City Youths**—Department of Pediatrics. This five-year project proposes to alter the high-risk behaviors of inner-city youths as a key contribution in stopping the spread of AIDS. The specific HIV risk activities to be prevented are obviously “unsafe” sexual conduct and drug abuse. However, the array of issues that actually affect adolescent behavior are a complex matrix of psychological, cognitive and cultural variables that are rooted at the community level. By integrating these factors into the formulation of innovative intervention models, this program would like to redirect the interactive behavior of 100 groups of adolescents in a positive manner. The actual outcome of the project will be several goal-oriented and community-based activities. The impact of the final approach will be evaluated in the individuals involved but should also be felt community-wide.

■ **Under the NIH Vaccine Testing and Evaluation Unit** five-year, \$7.3 million contract, the Center for Vaccine Development (Department of Medicine) conducts studies of the safety, immunogenicity and efficacy of candidate vaccines, and of the mechanisms of pathogenesis in human volunteers. Candidate vaccines against typhoid fever, traveler’s diarrhea, cholera, malaria and other infectious diseases are being tested in this facility, which includes a 32-bed Research Isolation Ward in University Hospital. This is the fourth consecutive NIH vaccine evaluation contract awarded to the university, which pioneered the use of community volunteers in vaccine studies in the mid-1970s.

■ **Supported by a \$2.4 million grant from the National Eye Institute**, the School of Medicine will soon begin participating in the national Related Eye Disease Study, whose mission is the early identification of signs of age-related degeneration of the retina’s center or macula.

■ **Balancing appropriate health care and cost is the focus of a major grant to the School of Medicine’s Department of Epidemiology and Preventive Medicine.** A five-year, \$5 million grant from the U.S. Department of Health and Human Services will enable two epidemiologists to collaborate with the Division of Orthopaedic Surgery to compare the effectiveness of hip fracture repair and total hip replacement in the elderly. They will then develop guidelines to assure patients optimal recovery while avoiding unnecessary and costly procedures.

■ **The Baltimore Program for Homeless Persons with Severe Mental Illness** is an NIMH-sponsored research demonstration project examining inno-

vative approaches to providing comprehensive community-based services to persons who are homeless and mentally ill. This interdisciplinary treatment team delivers mobile mental health, medical and social services to homeless persons in various community settings and emphasizes continuity of care. The program offers an excellent training site for students interested in delivery of care in the community to disadvantaged populations. The program is under the direction of the Department of Psychiatry's Center for Mental Health Services Research.

■ A Geriatrics Research, Education and Clinical Center (GRECC) has been established at the Baltimore Veterans Administration Medical Center. As one of 16 national centers of excellence for the advancement of research and clinical care in the elderly, the Baltimore center focuses on the prevention of cardiovascular disease and rehabilitation from stroke in older veterans. Interdisciplinary research programs examine the prevalence of risk factors for cardiovascular disease in older veterans and implement interventions of exercise training, nutrition counseling, smoking cessation and neurorehabilitation to determine the effectiveness of and the mechanisms by which these programs reduce risk for cardiovascular disease and improve the functional capacity and quality of life of older veterans. The goal of the GRECC is to attract outstanding professionals to conduct research, teach and deliver clinical care in interdisciplinary programs designed to promote health in older veterans.



PUBLIC SERVICE

In addition to training the majority of Maryland's practicing physicians, the faculty of the School of Medicine play an important role in providing leadership in health planning and policy making. For example, the Maryland Plan, a joint

School of Medicine-state Department of Health and Mental Hygiene venture, has revolutionized mental health care in the state and become a national model. Through an innovative residency program, the project has attracted board-certified psychiatrists to administrative and clinical positions in state mental hospitals and, in the process, significantly improved the quality of patient care.

Family medicine specialists augment house calls with coordination of the Supportive Care Program. Funded by the Robert Wood Johnson Foundation, the interdisciplinary health and home care program enables frail elderly and disabled Baltimoreans to remain in their own homes and avoid unnecessary placement in nursing homes.

Under a contract with the public school system, the Department of Pediatrics screens area children for developmental disabilities while genetics specialists counsel prospective parents in several remote areas of the state.

The Department of Epidemiology and Preventive Medicine designs computer models to forecast welfare caseload and use and, under a contract with the state Department of Health and Mental Hygiene, operates the Maryland Cancer Registry.



THE CAMPUS AND BEYOND

The School of Medicine is an integral part of one of the country's first centers for professional education and research. Located in downtown Baltimore, the 32-acre University of Maryland at Baltimore campus includes the Schools of Dentistry, Law, Nursing, Pharmacy, Social Work, the Graduate School and the University of Maryland Medical System and the Maryland Institute for Emergency Medical Services Systems. The University of Maryland at Baltimore shares the campus with the Baltimore Veterans Administration Medical Center and the Hope Lodge and Baltimore Ronald McDonald House, both offering low cost



housing and a home-like atmosphere for pediatric and adult outpatients and their families.

Opportunities abound for faculty and students to join with other health and human service professionals in interdisciplinary study, informal discourse and collaborative clinical practice and research. The Baltimore campus is located in the hub of one of the greatest concentrations of health care institutions, research facilities, government agencies and professional associations in the nation, offering students a wide selection of field experiences.

In addition to professional opportunities, the city of Baltimore offers a stimulating environment in which to live and study. Baltimore residents enjoy the sophistication of a large metropolitan city combined with easy accessibility to surrounding mountains, beaches and rural areas. The many attractions and resources of Washington, D.C. are less than a one-hour drive from Baltimore.

Having been the location of significant events in the history of our country and a renowned foreign-commerce seaport, Baltimore maintains a strong feeling of the past, typified by the many charming neighborhoods of restored houses and an abundance of historic monuments and buildings. In the last decade the downtown area has undergone dramatic revitalization. Within easy walking distance of the campus is the nationally acclaimed Inner Harbor area where Harborplace, the National Aquarium and the Maryland Science Center share the festival atmosphere of the harbor with hotels, shops and restaurants, water taxis, pleasure and tour boats and a wide variety of frequently visiting international ships. Restored townhouses and newly constructed townhouses and condominium complexes share the view and atmosphere and excitement of downtown living.

As a cultural center, Baltimore has offerings to please the most discriminating, including a world-class symphony orchestra, many fine museums, theaters, libraries, opera and ballet.

For sports fans, Baltimore boasts Oriole baseball, professional indoor soccer and ice hockey, collegiate and club lacrosse, horseracing and steeplechase. Opening with the 1992 season is the new home of the Baltimore Orioles, Oriole Park at Camden Yards. The new stadium is but a two-block stroll from the University of Maryland at Baltimore campus. The nearby Chesapeake Bay offers unparalleled opportunities for boating enthusiasts and water sportsmen. Gastronomy aficionados will delight in experiencing the seafood for which the region is famous.



Admissions Information

APPLICATION

The University of Maryland School of Medicine is a participant in the American Medical College Application Service (AMCAS). All requests for a place in the first-year class must be initiated by an AMCAS application. AMCAS application request cards can be obtained from AMCAS, 2450 N Street, N.W., Washington, D.C. 20037-1131, or from the Committee on Admissions, School of Medicine, University of Maryland at Baltimore, 655 West Baltimore Street, Baltimore, Maryland 21201. In addition, they are usually available from the pre-medical advisory office at the undergraduate college. AMCAS application material is ready for distribution about mid-May of the year in which an individual plans to submit an application to the School of Medicine.

For the School of Medicine, the AMCAS application is the first of a two-stage application process and is due in Washington by November 1. The Committee on Admissions thoroughly reviews the AMCAS application and,

based on the information contained in it, determines whether the second stage (School of Medicine) application form can be sent. An application fee (\$40) payable to the University of Maryland School of Medicine is sent only with submission of the second stage application form which is due by December 1. All applicants who are determined to be residents of the state of Maryland are invited to submit a second-stage application. Nonresidents will either be sent second-stage application material or will be informed that the Committee on Admissions cannot continue the application process.

The application form and supporting credentials should be filed as early as possible in the application period. Please do not have supporting credentials sent prior to submission of the second-stage application.

The applicant must assume responsibility for assuring that all required credentials and the completed application packet are filed with and received by the Committee on Admissions. The applicant is expected to respond truthfully and completely to all questions on the AMCAS and School of Medicine application forms. An applicant who provides false or misleading information may be denied admission or, if enrolled before discovery of irregularity in the application process, may be dismissed from the school.

EARLY DECISION PROGRAM

The University of Maryland School of Medicine has an Early Decision Program for applicants who are sure that their first choice of medical schools is the University of Maryland. The Committee on Admissions interviews selected early decision applicants and makes a decision on these students before considering the regular pool of applicants. By applying for early decision, the highly qualified applicant avoids having to make numerous other applications. Applicants with less competitive academic credentials or those without the support of their pre-medical advisor, are discouraged from applying through this program.

The early decision applicant must apply only to this school by the AMCAS deadline of August 1. Applicants must provide all supplementary information by September 1. Interviews will take place at the medical school between mid-August and late September. No one will be accepted without an interview. If offered a place by this school, the applicant cannot apply elsewhere. All decisions for this program are made by October 1.

The Committee on Admissions can make one of three decisions for each early decision applicant: 1) acceptance; 2) rejection; or 3) placement into the regular applicant pool for review at a later time. Each applicant will be notified promptly of the Committee on Admissions' decision so that those not accepted through this program can apply elsewhere.

Individuals who apply through the Early Decision Program cannot apply to any other medical school until they are notified that they have not been accepted through this program at the University of Maryland.

APPLICANT SELECTION CRITERIA

Academic achievement, extracurricular activities, personal characteristics, recommendations from the premedical committee or college instructors, scores on the Medical College Admissions Test (MCAT) and personal interview all are considered in the committee's evaluation of an applicant. Academic achievement and/or high MCAT scores do not in themselves ensure acceptance. Of significant concern to the Committee on Admissions are the applicant's character, personality and potential to perform as a medical student and as a future physician. Personal integrity, emotional maturity and stability, motivation, interests and activities outside the classroom and interpersonal and communication skills are all carefully evaluated. Candidates must be proficient in both written and spoken English.

Applications from persons with outstanding credentials from other areas of the United States and Canada are welcome and will receive all possible consideration. Preference in the selection process is given to residents of the state of Maryland. Applications can be processed only from citizens of the United States and Canada or from individuals who reside in this country on a permanent resident visa. Occasionally an applicant residing in the United States holds a visa permitting him/her to live in the United States indefinitely and to establish residency in one of the states. Applications are accepted from these individuals. Those on a time-limited visa, such as a student visa, are not eligible for admission to the School of Medicine.



ADMISSION TO THE FIRST-YEAR CLASS

The student should plan a four-year curriculum with a suitable arts or science major leading to a bachelor's degree. The Committee on Admissions encourages applicants to pursue a course of study that is rigorous, scholarly and focused on areas that

are intellectually challenging and interesting to the applicant. The Committee on Admissions seeks to admit students with diverse academic backgrounds.

A minimum of 90 semester hours of acceptable college credit is required, exclusive of physical education and military science. These must be earned in colleges or universities whose names appear on the current list of Accredited Institutions of Higher Education as compiled by the National Committee of Regional Accrediting Agencies of the United States. The only courses accepted are those that are approved for credit towards a degree by the university or college attended. Preparation at a foreign college or university must be supplemented by a year or more of work in an approved university or college in the United States.

Successful completion of the following courses and credits is required prior to matriculation at the School of Medicine.

Semester Hours

Biological sciences	8
General chemistry	8
Organic chemistry	6
General physics	8
English	6

No more than 60 hours can be accepted from accredited junior colleges and then, only if these credits are validated by a college offering a Bachelor of Arts or Science degree. Advanced placement credits for science courses taken in high school may be accepted if the applicant's college (which grants the bachelor's degree) has given college credit for those courses. Other exceptions may be granted at the discretion of the Committee on Admissions.

Selected students who enter the School of Medicine from colleges that usually grant a baccalaureate degree after the successful completion of the first year of medical school are responsible for: (1) providing a certificate from the college or university certifying eligibility for this degree; and (2) meeting all requirements of the School of Medicine for advancement to the second year.

The MCAT must be taken no later than fall of the year preceding the desired year of entrance and must be taken within three years of the anticipated date of matriculation. Applicants should write to the American College Testing Program, P.O. Box 414, Iowa City, Iowa 52240, for further information and registration forms, or to the Committee on Admissions.

A letter of recommendation from the undergraduate premedical committee or an officially designated premedical advisor is required. If the applicant's undergraduate college or university does not have a premedical committee or advisor, three letters of recommendation are required from faculty who have taught the applicant. Two of these letters must come from instructors who have taught the applicant in the sciences. Applicants who have earned advanced degrees or who have been out of school for a significant length of time should

submit a letter of recommendation from each component of their education or major work-related experience. Letters of recommendation should be submitted by individuals qualified to evaluate the applicant's accomplishments, productivity and character in an objective and critical manner. All letters of recommendation should be sent directly to the Committee on Admissions. They are not to be sent to AMCAS.

Each applicant's credentials are evaluated by the Committee on Admissions to determine if an interview is to be granted. All interviews are conducted at the University of Maryland School of Medicine. These interviews are scheduled in advance by invitation.

In its selection process, the Committee on Admissions must use the applicant's residency status that is in effect on the last day applications can be received (December 1). The Office of Records and Registration (a campuswide office), University of Maryland at Baltimore, 621 West Lombard Street, Baltimore, Maryland 21201; 410-706-7480, *is responsible for all decisions regarding residency. All questions, complaints and appeals regarding residency status should be directed to that office, not to the Office of Admissions for the School of Medicine.* Nonresidents who matriculate at the School of Medicine should plan to maintain that status throughout the four years of medical school. Current standards for reclassification to in-state status are rigorous and may make reclassification difficult.

For further information regarding the admissions process in general, the applicant is referred to a booklet entitled "Medical School Admissions Requirements," which can be obtained from:

Association of American Medical Colleges
2450 N Street, N.W.
Washington, D.C. 20037-1126



ADVANCED STANDING

Students who have attended medical school in the United States are eligible to file application for admission to the second- and third-year classes only. Applications must be submitted between January 1 and May 1 of the desired year of admission. Applicants for advanced standing must meet all of the current first-year entrance requirements and must present acceptable medical school credentials and a medical school record based on courses that are equivalent to similar courses in this school. The applicant must have taken the MCAT examination and completed the undergraduate prerequisites. Applicants for admission with advanced standing to the year III class also are required to take and pass Part I of the National Board Examination.

No student who has been dismissed from any medical school will be considered, unless his/her former dean submits a letter addressed to the Committee on Admissions confirming that the student has been reinstated in good standing and is eligible for promotion. No student can be considered who is not eligible for promotion at the time of transfer.

Persons who already hold the degree Doctor of Medicine cannot be admitted to the medical school as candidates for that degree from this university. This is true for both advanced standing and first-year applicants. Individuals whose graduate work has been in the fields of dentistry, osteopathic medicine or podiatric medicine are not candidates for advanced standing.

Citizens of the United States who are studying medicine in foreign medical schools may apply for admission to the year III class only. Application must be made no later than May 1 of the year of desired admission. Applicants for advanced standing must meet all of the first-year entrance requirements, including the MCAT examination and undergraduate prerequisites, and submit acceptable medical school credentials as well as a medical school record based on courses equivalent to similar courses in this school. Students in foreign schools must take and pass Part I of the National Board Examination.

Financial Information

DETERMINATION OF IN-STATE STATUS

An initial determination of in-state status for admission, tuition and charge-differential purposes will be made by the university at the time a student's application for admission is under consideration. The determination made at that time, and any determination thereafter, shall prevail in each semester until the determination is successfully challenged prior to the last day available for registration for the forthcoming semester. A determination regarding in-state status may be changed for any subsequent semester if circumstances warrant redetermination.

In those instances where an entering class size is established and where an application deadline is stated, in-state conditions for admissions must be satisfied as of the announced closing application date.

Applications for review of eligibility and questions concerning the university policy should be directed to the Office of Records and Registration, University of Maryland at Baltimore, 621 West Lombard Street, Baltimore, Maryland 21201.

Students classified as in-state for admission, tuition and charge-differential purposes are responsible for notifying the Office of Records and Registration, in writing, within 15 days of any change of circumstances which might affect their classification at the Baltimore campus.

A complete policy statement may be obtained from the School of Medicine's Committee on Admissions or the UMAB Office of Records and Registration.

TUITION AND FEES FOR 1992-1993

	PER SEMESTER	PER YEAR
Application Fee/Matriculation Fee*	--	\$ 40
Tuition—In-State	4,582	9,164
Tuition—Out-of-State	9,315	18,630
Instructional Resources Fee	42	84
Student Activities Fee	28	56
Student Health Fee	32	64
Hospital Insurance (Individual)**	339	679
Student Liability Insurance***	--	175
Supporting Facilities Fee	92	184
Academic Service Fee	5	10
Dormitory Fee****	1,275	2,550
Graduation Fee—Seniors	--	30
Student Government Fee	5	10
Hepatitis Vaccine (First Year)	--	140

*An application fee of \$40.00 should be submitted with the formal application to the School of Medicine. This fee will be applied against the matriculation fee for accepted students. A partial tuition prepayment may be required before matriculation.

** Hospital insurance is required of all full-time students. A brief outline of the student health insurance program is furnished each student. Students with equivalent insurance coverage must provide proof of such coverage by September 15 for fall registration and by February 15 for spring registration to Student and Employee Health at the time of registration to obtain a hospital insurance waiver. Rates are subject to change.

*** Student liability (malpractice) insurance is required of all students.

**** Rate based on 10-month year. Transient rates available for summer.

FEES

The application and/or matriculation fee partially defrays the cost of processing applications for admission and enrollment data in the professional schools. These fees are not refundable.

The tuition charges meets a portion of the costs for the educational program and supporting services.

The instructional resources fee is charged to provide funds for supplies, materials, equipment and other costs directly associated with the instructional program.

Student activities fees are used to meet the costs of various student activities, student publications and cultural programs. The Student Government Association, in cooperation with the Dean's Office, recommends expenditure of the fees collected.

A student health fee is charged to help defray the cost of providing health services, which include routine examinations and emergency care. Acceptable medical insurance is required in addition to the student health fee.

The supporting facilities fee is used in support of the expansion of various facilities on campus that are not funded or are partially funded through other sources.

Diploma fees are charged to help defray costs involved with graduation and commencement.

All checks and money orders should be made payable to the University of Maryland for the exact amount of the actual bill.

A service charge is assessed for dishonored checks. It is payable for each check returned unpaid by the drawee bank because of insufficient funds, stopped payment, postdating or if it has been drawn against uncollected items.

■ For checks up to \$50—\$5

■ For checks from \$50.01 to \$100—\$10

■ For checks over \$100—\$20

Late registration fees defray the cost of the special handling involved for those who do not complete their registration on the prescribed days. No diploma, certificate or transcript will be issued to a student until all financial obligations to the university have been satisfied.

The university reserves the right to make such changes in fees and other charges as may be necessary.



REGISTRATION

To attend classes at the University of Maryland at Baltimore campus it is necessary to process an official registration. All students are required to register each term in accordance with current registration procedures. The balance of tuition and fees is due and payable on the dates specified for registration. Registration is not completed until all financial obligations are satisfied. Students who do not complete their registration, including the payment of their bill on the registration days, will be subject to a late registration fee.

Courses taken concurrently with a University of Maryland at Baltimore registration at another campus or institution must have program approval in advance by the appropriate University of Maryland at Baltimore officials. Off-campus registration forms are available in each dean's office and in the Office of Records and Registration.

Although the university regularly mails bills to advance-registered students, it cannot assume responsibility of their receipt. If any student does not receive a bill prior to the beginning of a semester in which he or she has advance-registered, it is that student's responsibility to contact Student Accounting, Administration Building, during normal business hours.

Students who arena-register or advance-register and subsequently decide not to attend UMAB must notify the Office of Records and Registration, Room 326, Baltimore Student Union, in writing, prior to the first day of instruc-

tion. If this office has not received a request for cancellation by 5:00 p.m. of the last day before instruction begins, the university will assume the student plans to attend and accepts the financial obligation.

After classes begin, students who wish to terminate their registration must submit an application for withdrawal to the Office of Records and Registration. Students are liable for all charges applicable at the time of the withdrawal.

If a satisfactory settlement or agreement for settlement is not made with the Business Office within 10 days after a payment is due, the student is automatically barred from attendance at classes and will forfeit the other privileges of the School of Medicine.

WITHDRAWAL

Students who wish to leave the School of Medicine at any time during the academic year are required to file a letter of resignation with the dean. In addition, an Application for Withdrawal form bearing the proper signatures must be filed with the Office of Records and Registration. The student must satisfy the authorities that he or she has no outstanding obligations to the school and must return his or her student identification card.

If the above procedures are not completed, the student will not be entitled to honorable dismissal and will forfeit the right to any refunds to which that student would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is signed by the dean.

ACADEMIC STANDING

Students who voluntarily withdraw during an academic semester will be given no credit. Students are not permitted to resort to withdrawal in order to preclude current or impending failures. Their standing on withdrawal will be recorded at the Office of Records and Registration. Students who withdraw from the medical school and later desire readmission must apply to the Committee on Admissions unless other arrangements have been made with the dean's written consent.

REFUNDS

Students officially withdrawing from the school will be credited for all academic fees charged to them less the matriculation fee, in accordance with the following schedule from the date instruction begins:

■ Two weeks or less	80 percent
■ Two to three weeks	60 percent
■ Three to four weeks	40 percent

■ Four to five weeks	20 percent
■ After five weeks	0 percent

LEAVES OF ABSENCE

Students who are in good standing may be granted one year's leave of absence on request of the dean. Longer leaves can be arranged only under special circumstances with the exception of those students in the combined MD/PhD program.

REQUIRED EQUIPMENT

Dissecting Instruments: At the beginning of the first year, all freshmen must possess a complete set of dissecting instruments similar to those on display at the campus bookstore.

Microscopes: All freshmen also must provide themselves with a standard microscope. All microscopes must conform to the following specifications:

- Binocular
- 10X oculars (wide field oculars are recommended, but not required)
- Quadruple nose piece
- Four parfocal objective lenses:
 - 30 mm., 4X, 0.1 N.A.
 - 16 mm., 10X, 0.25 N.A.
 - 4 mm., 43X, 0.65 N.A.
 - 1.8 mm., 97X, oil immersion, 1.25 N.A.
- Mechanical stage to accommodate standard size microscopic slides (the stage need not be graduated)
- Light source (built-in on base is preferable)
- Substage condenser
- A carrying case (recommended)

Students are cautioned about purchasing used or odd-lot microscopes since some of the older instruments are in poor optical or mechanical condition. Second-hand microscopes should be approved by the department prior to purchase.

Based on the determination of financial need, first-year medical students may qualify for loan of a microscope.

Other Equipment: By the second year, medical students are required to have an ophthalmoscope, otoscope, a blood pressure cuff and stethoscope. The estimated cost of these items, plus other essentials such as lab coats, is \$400 to \$450.

FINANCIAL ASSISTANCE

The School of Medicine's financial aid program is available to medical students who demonstrate financial need. Through a varying combination of grants, scholarships, loans and part-time employment, students may receive assistance in meeting educational expenses. In addition to school resources, outside funding agencies make financial assistance available to qualified medical students.

An application for financial aid must be submitted annually to be considered for assistance during the following academic year. Priority filing date is February 15. Entering students may request financial aid applications from either the Committee on Admissions or the Student Financial Aid Office. Students currently enrolled in the School of Medicine may obtain forms from:

Student Financial Aid Office
University of Maryland at Baltimore
621 West Lombard Street
Baltimore, Maryland 21201

Student assistance is awarded on the basis of demonstrated financial need. Eligibility for financial aid is dependent upon the student maintaining good academic standing and full-time attendance. When determining the amount to be awarded, the financial aid committee considers the following: (1) income, assets and resources of the student and student's family; (2) support available to the student from nonuniversity sources and (3) the costs reasonably necessary for full-time attendance at the school.

Renewal of financial aid for succeeding years depends on annual submission and review of a financial aid application, good academic standing, the student's continued financial need, and the availability of funds. A complete description of the procedures used to evaluate applications for aid, the student budgets used and various university, state and federal programs, can be found in the brochure "Financial Aid at UMAB."

Medical School Funds

University Grants. Made to Maryland residents.

Dean's Scholarship. Funds provided the school are awarded primarily to nonresident students.

Desegregation Grants. Minority students who are Maryland residents are eligible for these funds. Desegregation grants are normally used to reduce the amount of loan included in the financial aid award.

Medical Alumni Association. Interest-free loans are available to students on the basis of financial need.

Work-Study. The College Work-Study Program provides jobs for students who need financial aid and who choose to earn part of their educational expenses. Jobs are arranged either on- or off-campus with a public or private nonprofit agency. Eligible students may be employed for as many as 20 hours per week. To be eligible for College-Work Study a student must apply for financial aid and demonstrate financial need.

Private and Endowment Funds. From bequests and private donations, the School of Medicine has established private and endowment accounts to provide fellowships, scholarships and loans for students on the basis of their academic achievement and financial need. The amounts of these fellowships, scholarships and loans vary and are awarded on an annual basis in accordance with school policy. The availability of support from each of the funds listed below is dependent upon the income generated. Moreover, since many of the funds are governed by specific provisions set forth by the donors, awards must be made accordingly.

Scholarships

H. N. Baetjer Scholarship
Balder Scholarship Fund
Dr. Robert W. Buxton Scholarship
Percy M. Chaimson Scholarship Fund
Dr. William H. Crim Scholarship
Israel and Cecilia E. Cohen Scholarship
Dodge Fund
Marcia Thomas Duncan Medical Scholarship
A. Lee Ellis Scholarship
Arthur Wright Erskine Scholarship
Dr. John E. Esnard Endowment
Sharon Fox Scholarship
Samuel Leon Frank Scholarship
Laurence Gale Memorial Scholarship
Joseph B. Ganey Scholarship
Marion Jackson Givens
Harry Gudelsky Fund
Horace Bruce Hetrick Scholarship
Margaret A. Hicks Scholarship
Charles H. and Charles M. Hitchcock Scholarship
Donald J. Hobart Scholarship

Sean Peter Houlihan Memorial Scholarship
 G. D. Jackson Scholarship
 Leo Karlinski Scholarship
 Elsie Larrimore Scholarship
 Emmett and Ruth Light Scholarship
 Dr. Alex J. and Clara Maysels Scholarship
 Dr. James N. McCosh, Jr. Memorial Scholarship
 Nataro Family Scholarship Fund
 Frederick and Anne Nichols and Edwina Justin Fund
 PIE Mutual Insurance Company Scholarship
 Henry Rolando Scholarship Fund
 Scharling Memorial Fund
 Morton and Elaine Schwartz Scholarship
 David Street Memorial Scholarship
 Dr. Charles Robert Thomas
 Arnold Tramer Scholarship Fund
 Michael Vinciguerra Trust Scholarship
 Clarence and Geneva Warfield Scholarship
 John F.B. Weaver Scholarship
 John L. Whitehurst Fund
 Sara A. Whitehurst Fund
 Walter N. Winters Scholarship
 Randolph Winslow Scholarship
 Henry Zoller, Jr. Scholarship

Loan Funds

Balder Loan Fund
 Class of 1916 Memorial Loan Fund
 Class of 1931 Loan Fund (Christopher C. Shaw)
 Class of 1935 Student Loan Fund
 Class of 1934 Foundation Loan Fund
 Senior Class Loan Fund
 Senior Class of 1945 Loan Fund
 Dr. Wetherbee Fort Loan Fund
 Gold-Steinberg Memorial Loan Fund
 Issac Gutman Loan Fund
 Sandra Minna Hoffman Memorial Student Loan Fund
 W.K. Kellogg Loan Fund
 William and Sarah Kraut Loan Fund
 Michael H. Lipman Loan Fund
 Joseph Lipskey Loan Fund
 Jacob B. and Shirley K. Mandel Loan
 Marie K. Manger Loan Fund
 Frank C. Marino Loan Fund
 Drs. Charles W. and Kathleen R. McGrady Student Loan Fund

Medical Alumni Association Student Loan Fund
Medical School Council Loan Fund
Edward and Lina Meirhof Loan Fund
Nataro Family Student Loan Fund
Jessie Smith Noyes Loan Fund
Charles Pfizer Loan Fund
Dr. J.M.H. Rowland Memorial Student Loan Fund
Dr. F. Mason Sones, Jr. Memorial Student Loan Fund
Webster M. Strayer Loan Fund
Jimmie Swartz Foundation Loan Fund
Jay Whitman Memorial Student Loan Fund
H. Swartz Family Medicine Loan

Outside Sources

Central Scholarship Bureau offers interest-free loans in amounts up to \$3,500 per year (maximum total of \$8,000) to qualified Baltimore City and Baltimore County residents.

c/o #108 Bristol House Apartments
4001 Clarks Lane
Baltimore, Maryland 21215

Health Education Assistance Loans (HEAL) are made by private lenders to medical, dental and pharmacy students. The annual legal loan maximum is \$20,000 for medical and dental students, \$12,500 for pharmacy students; the aggregate maximum is \$80,000 for medical and dental students, \$50,000 for pharmacy students. The annual interest rate on the loan is variable and may change quarterly. During 1991 the average quarterly interest rate was 9.25 percent. Interest is not subsidized, and will accrue to the loan balance while the borrower is in school, although payment of principal and interest may be deferred while the borrower is a full-time student.

Health Professions Loans may equal tuition plus \$2,500 annually. Interest accrual at 5 percent and principal payments are deferred until one year after graduation at which time both interest and principal payments begin. Both interest and principal may also be deferred for internships and residencies and for up to three years of service in the uniformed services (including National Health Service Corps) and the Peace Corps. Interest accrues from beginning of repayment period.

Loans for Parents are made by private lenders to the parents of dependent students. The terms are the same as for Supplemental Loans for Students. Students are encouraged to consider financial aid available through sources outside the School of Medicine. Each of the programs requires a separate application. While application deadlines vary, most are in early spring.

Maryland State Scholarship Administration offers one-year grants of \$200-\$1,000, which can be sought for subsequent years by proper reapplication. Senatorial and House of Delegates awards are also available. To apply, students should complete the Maryland form of the FAF.

The Maryland State Scholarship Administration also awards Maryland Family Practice Scholarships. These awards are for students enrolled in the School of Medicine, University of Maryland at Baltimore, and pursuing a Doctor of Medicine degree. A recipient must have been a Maryland resident for five years, have definite financial need and be willing to enter the general practice of medicine serving the state of Maryland in an area of need (bond required). These \$7,500 per year awards continue for up to four years and no renewal application is required.

National Medical Fellowships are need-based awards to minority medical students. For further information and applications write:

National Medical Fellowships
250 West 57th Street
New York, New York 10019

Perkins Loans (formerly known as National Defense/Direct Student Loans) are made by the university to students. The aggregate legal loan maximum is \$18,000 (including undergraduate borrowing). The annual interest rate is 5%. Interest does not accrue until repayment begins.

Stafford Loans (formerly Guaranteed Student Loans) are made by private lenders. The annual legal loan maximum for graduate students is \$7,500. The aggregate loan limit is \$54,750. Current interest rate for new borrowers is 8 percent. Interest does not accrue until repayment begins.

Supplemental Loans for Students are made by private lenders. Students may borrow up to \$4,000 a year with an aggregate limit of \$20,000. The interest rate is variable and will be adjusted annually, with a 12 percent cap. Interest will accrue on the loan from the date of disbursement and may either be paid quarterly or will be capitalized. During the 1991-92 academic year the rate was 9.34 percent.



Academic Information

ACCREDITATION

The University of Maryland is accredited by the Middle States Association of Colleges and Secondary Schools and is a member of the Association of American Universities. The School of Medicine is accredited by the Liaison Committee on Medical Education, the accrediting body for the Association of American Medical Colleges and the American Medical Association.

GENERAL RULES

The university authorities reserve the right to make changes, whenever appropriate, in the curriculum, the requirements for advancement and graduation, fees and rules and regulations.

Matriculants are required to accept the provisions of the Judicial Board and agree to assume its obligations prior to registration.

Students who report for classes later than one week after the scheduled time will be permitted to begin work only by permission of the dean. Attendance at all scheduled classes is expected.

Notice of change of address should be submitted promptly to the Dean's Office and to the Registrar's Office.

All new students, whether they are admitted to the first-year class or with advanced standing, are expected to attend an orientation for new students.

GRADES AND PROMOTION

The final grades for all courses in all four years should be recorded as follows:

- A (Excellent)
- B (Very Good)
- C (Satisfactory)
- D (Unsatisfactory)
- F (Failing)

Incomplete—This designation is used only when mitigating circumstances (e.g., illness, unavoidable absence) have prevented the student from completing the course on time. It is to be viewed as a non-prejudicial entry on the student's record; the grade "Inc" remains on the official student transcript.

An award of "Honors" is given to a student who receives a final grade of "A" and performs an additional scholarly effort that is clearly outstanding.

In addition to the final objective grade and the "Honors" category, the student's overall performance is evaluated subjectively. Appropriate evaluation forms are designated for this purpose.

Established rules for advancement and dismissal during all four years have been approved by the faculty and student body representatives of the School of Medicine Council. All regulations related to grading, advancement and dismissal are included in the Academic Handbook given to all entering students at orientation.

The faculty reserves the right to determine whether a student may withdraw, repeat, advance or graduate on academic or moral and personal grounds, including traits of character.

EQUAL OPPORTUNITY

The University of Maryland is an equal opportunity institution with respect to both education and employment. The university's policies, programs and activities are in conformance with pertinent federal and state laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, sex and handicap.

The school has the objective of securing a broad racial, sexual and ethnic balance in its enrollment. To achieve this objective it gives every consideration to minority student applications.

UNETHICAL CONDUCT

In order to matriculate and/or graduate, students must be of good moral character, consistent with the licensure requirements of the state of Maryland for physicians, and must demonstrate character traits consistent with competent performance as a physician. The school reserves the right to dismiss or fail to graduate any student whose actions or overall academic performance, including clinical performance, do not demonstrate good moral character and ability to function effectively as a physician. Such action may be taken notwithstanding a student's compliance with standards for advancement and graduation set out in the School of Medicine grading policy.

GRADUATION RATES

Ninety-seven percent of the students enrolled in the School of Medicine complete their course of study within the four-year period; three percent complete their course of study within the maximum five-year period. These figures are representative of those students actively pursuing their MD degree. They do not include those students in the MD/PhD track (usually six years) or those students who are granted a year off to engage in research, etc.

SALARY AND EMPLOYMENT INFORMATION

A high percentage of graduates enter the practice of medicine after completion of residency training. There appears to be a moderate excess of physicians in some disciplines of medicine and in some geographic areas. However, the overall need for persons holding the MD degree is such that all graduates of the School of Medicine may expect a satisfactory income.

PRIZES AND AWARDS

- The Doctor Wayne W. Babcock Award for Excellence in Surgery is awarded to a graduating senior for outstanding work in surgery.
- The Balder Scholarship Award for Outstanding Academic Achievement by a graduating senior.
- The Doctor Eugene Sydney Bereston Award for Excellence in Dermatology.
- The Doctor J. Edmund Bradley Award for Excellence in Pediatrics is awarded to a graduating senior who has achieved special excellence in pediatrics.
- The Doctor Eugene B. Brody Award for Excellence in Psychotherapy. A graduating senior is awarded a check and a certificate for outstanding achievement in psychotherapy.
- The Louis, Ida and Samuel Cohen Award for Personal Attributes of Scholarship, Ability and Compassion for Patients. A check and certificate are awarded annually to a member of the senior class in recognition of superior scholarship, scientific knowledge in internal medicine and human understanding and compassion for patients.
- The Doctor Francis Donaldson Award for Pathology. A check and a certificate are awarded to a graduating senior who excelled in sophomore pathology.
- The Douglass Award for Excellence in Obstetrics and Gynecology.
- The Robley Dunglison Award for Excellence in Preventive Medicine. A check and a plaque are awarded to a graduating senior who has performed with special excellence in epidemiology and preventive medicine.
- Faculty Gold Medal for Outstanding Qualifications for the Practice of Medicine. Each year a medal is struck and presented to the graduating senior who exemplifies outstanding qualities of a physician, i.e., scholar-

ship, compassion and problem-solving skills, and shows interest in serving the University of Maryland School of Medicine.

■ The Department of Family Medicine J. Roy Guyther, MD Award for Excellence in Education and Training in Family Practice. A plaque, check and certificate are awarded to a senior for excellence in training in the concept of family medicine.

■ The Doctor Jacob E. Finesinger Award for Excellence in Psychiatry is awarded to a member of the senior class, selected by the faculty, for outstanding work in psychiatry.

■ The Doctor A. Bradley Gaither Memorial Award for Excellence in Genito-Urinary Surgery is awarded a graduating senior excelling in genito-urinary surgery.

■ The Doctor William Alexander Hammond Award for Excellence in Neurology awarded to a graduating senior who has performed with special excellence in neurology.

■ The Doctor Martin Helrich Award for Excellence in Anesthesiology.

■ The Doctor Leonard M. Hummel Memorial Award for Excellence in Internal Medicine. A gold medal and certificate of proficiency are presented to the graduate, selected by the faculty, who has exhibited outstanding qualifications in internal medicine.

■ The Doctor I. Earl Pass Award for Excellence in Internal Medicine is awarded to a graduating student who has demonstrated exceptional proficiency in the field of internal medicine.

■ The Doctor Milton S. Sacks Memorial Award for Excellence in Internal Medicine and Hematology is awarded to a graduating senior who has performed with special excellence in medicine and hematology.

■ Summa, Magna and Cum Laude Awards of Honor presented to those candidates for graduation who have exhibited outstanding qualifications for the practice of medicine during their four academic years.

■ The Uhlenhuth Award for Anatomy. A check and a certificate are awarded to a graduating senior for outstanding academic performance in anatomy during the freshman year.

- The Rudolf Virchow Award for Research in Pathology. A check and a certificate are awarded to a graduating senior who conducted outstanding research in pathology.
- The Doctor Hans R. Wilhelmsen Award for Outstanding Achievement in Surgery is awarded to a graduating senior for academic achievement in surgery.



Programs of Study

CURRICULUM

Broadly stated, the education objectives of the School of Medicine are:

- To educate students intensively and broadly in medicine and in the science of medicine. To equip students to engage in a lifetime of learning in order that they may successfully adapt to the changing environment and achieve a high level of professional competence and social awareness.
- To provide opportunities for students at every level of training to pursue areas of special interest for intellectual stimulation and/or career advancement.
- To encourage the formation of highly competent specialists, primary care physicians, or scholars in basic or clinical research or administration.

In order to meet changing needs of graduate medical education and the practice of medicine, the curriculum may vary from year to year. A standing Curriculum Coordinating Committee, composed of department chairpersons, special course chairpersons, faculty members-at-large, and representatives of the student body, has the responsibility of regularly monitoring and reviewing the curriculum and recommending changes whenever they are deemed appropriate.

First and Second Years. There are two four-month core sessions in each of the first two years. In January of the freshman year and June of both years (known as minimesters), students take a required minimum of eight elective freshman/sophomore credits before advancing to the third year. These electives may be taken during any one of the four minimesters at the student's and advisor's discretion and as approved by the Electives Committee.

During the freshman year, the following core courses are taught: Anatomy (including gross anatomy, histology and embryology), Biochemistry, Behavioral and Social Science, Physiology and Biophysics (combined), Neurosciences (interdisciplinary), Genetics, and Biostatistics. In addition, during the freshman year interdisciplinary course, Introduction to Clinical Practice, students are exposed to interviewing techniques. Intimate Human Behavior, an interprofessional course under the aegis of the Office of Medical Education, is required of freshman medical students.

During the sophomore year, students enroll in the following core courses: Microbiology, Pathology, Pharmacology and Experimental Therapeutics, Physical Diagnosis, Psychopathology, and Epidemiology and Preventive Medicine. Introduction to Clinical Practice continues in the sophomore year and includes specialty physical diagnosis and medical ethics. There is continued emphasis on clinical correlation throughout the two years with combined instruction by basic and clinical science faculty. This correlative teaching provides the medical student with the full spectrum of the basic science foundation and the clinical science presentation of disease states. Attendance in all small groups including laboratories and discussion groups, is mandatory in both the freshman and sophomore years.

Time for independent study has been added to the first and second years.

Third and Fourth Years. The clinical years curriculum was recently revised. The two clinical years are viewed as a single unit with the student assuming progressive responsibility for patient care. The junior clinical experience consists of two 12-week rotations, one in Internal Medicine and one in Surgery; three six-week rotations in Pediatrics, Psychiatry, and Obstetrics and Gynecology; and two four-week rotations in Radiology/Ophthalmology and Neurology/Rehabilitation Medicine. These two four-week rotations alternate between junior and senior years, depending on a student's predetermined schedule. As noted, students take all of these rotations according to individual schedules. The sum of these experiences provides a 46-week introduction to clinical science.

The 36-week block that follows includes a 16-week elective period during which the student may take eight weeks of electives off-campus. An additional eight weeks must be spent in a student internship in one of four clinical

fields: medicine, surgery, pediatrics or family practice. Here the student has an opportunity for primary patient care responsibility over a prolonged period of time. These rotations are offered at the University of Maryland Medical System and in approved affiliated hospitals. The third segment is a consecutive eight-week experience in an ambulatory setting. These outpatient settings include internal medicine, pediatrics and family practice, with additional experience in epidemiology and preventive medicine. Attendance in all course work in clinical areas is mandatory. The current clinical curriculum frequently involves week-end attendance. In any additional free time, the student may audit available electives.

The 82-week combined clinical years program provides a strong grounding in clinical science with a progressive opportunity for primary patient care responsibility. The curriculum is designed to prepare the medical student for the increasing responsibility demanded by the specialty residency programs adopted throughout the country.

The Curriculum at a Glance

Year I

Fall

Gross Anatomy

Histology

Embryology

Biochemistry

Intimate Human Behavior

Behavioral & Social Science*

Minimesters (January and June)

Spring

Physiology and Biophysics

Neurosciences

Genetics

Biostatistics

Introduction to Clinical Practice

Year II

Fall

Microbiology

Pathology*

Pharmacology & Experimental

Therapeutics*

Physical Diagnosis*

Introduction to Clinical

Practice (ICP)*

Minimester (June)

January Block Teaching

Psychopathology

Epidemiology & Preventive Medicine

Year III

Medicine

12 weeks

Surgery & Surgical

Subspecialties

12 weeks

Pediatrics

6 weeks

Psychiatry

6 weeks

Obstetrics and Gynecology

6 weeks

Radiology/Ophthalmology**	4 weeks
Neurology/Rehab Medicine**	4 weeks

Year IV	
Electives	16 weeks
Student Internship (Medicine, Surgery, Pediatrics or Family Practice)	8 weeks
Ambulatory Care (Medicine, Pediatrics or Family Practice)	8 weeks

*Yearlong course
 **One in junior year; one in senior year

COMBINED MD/PHD PROGRAMS

Research in human disease requires investigators with interests and training in both basic science and clinical medicine. The primary objective of the MD/PhD Program is to train medical scientists. These individuals will differ from most basic scientists by having the clinical background necessary for the management and investigation of human disease. Equally, the MD/PhD medical scientist will differ from most physicians by having extensive laboratory experience and the scientific background that can lead to the application of a basic scientific approach to studies of clinical problems. To achieve this goal, a flexible program of combined medical and scientific training is provided to highly motivated students of superior research and academic potential. This program utilizes fully the broad range of basic and clinical science opportunities that are available at the University of Maryland at Baltimore.

The MD/PhD Program is offered through the Departments of Anatomy, Biochemistry, Biophysics, Epidemiology and Preventive Medicine, Microbiology and Immunology, Pathology, Pharmacology and Experimental Therapeutics, Physiology, and the Division of Human Genetics as well as the Department of Chemistry and Biochemistry at the University of Maryland Baltimore County.

The degree requirements for the combined MD/PhD will be equivalent to those of the separate degree requirements for the Doctor of Medicine in the School of Medicine and the Doctor of Philosophy in the University of Maryland Graduate School, Baltimore. It is anticipated that the MD/PhD degree can be completed within six to seven years.

Although the schedule of training can be flexible, entering students typically complete the two preclinical years as regular medical students and receive graduate credit for many courses taken during this period. The students use minimesters and summers to gain research experience in the basic science departments of their choice. Students are expected to “rotate” through the vari-

ous laboratories in the selected graduate department in order to facilitate the final choice of a thesis advisor.

After the preclinical years, MD/PhD students enroll as full-time graduate students for two-to-three years, taking required graduate courses and seminars, conducting research and focusing on dissertation research. Subsequently, they begin the clinical clerkships using elective periods during the clinical years to complete PhD research. This sequence is general; a student may complete the program in a different sequence, depending on the schedule developed in consultation with the student's advisor.

Applicants to the MD/PhD Program are required to meet the admissions requirements of the School of Medicine and the University of Maryland Graduate School, Baltimore. Qualified candidates are interviewed and selected by the MD/PhD Program Advisory Committee. Applications will be considered from qualified juniors or seniors at any accredited university, as well as from medical students currently enrolled at the University of Maryland at Baltimore. In addition, applications will be considered from students currently enrolled in a graduate level program (i.e., MS, PhD) at the University of Maryland School of Medicine or other accredited universities. An application form is included in the medical school admissions packet.

Some applicants from each entering class may be awarded a waiver of tuition (at the financial level of Maryland resident tuition) for a maximum of six years. The waiver will be awarded based upon academic excellence. A stipend may be provided by the research sponsor during the PhD portion of the program.

For more information contact:

Marshall L. Rennels, PhD
Director, MD/PhD Program
School of Medicine, University of Maryland at Baltimore
655 West Baltimore Street
Baltimore, Maryland 21201
410-706-7478

SHORT TERM RESEARCH TRAINING PROGRAM (STRTP)

In an effort to enhance student involvement in biomedical investigation, the school encourages students to participate in supervised research projects through the Short Term Research Training Program (STRTP). The program is supported jointly by a training grant from the National Institutes of Health and the Office of the Dean. Both the faculty and administration of the School of Medicine are committed to the training of physician-scientists. By encouraging medical student research, the STRTP strives to enhance the connection between the treatment of patients and the scientific investigations which enable patient care to advance. The physician-scientist who bridges both basic and clinical sciences and clinical practice is therefore in an ideal position to translate research into

clinical application and patient problems into laboratory investigation. Currently, research is being conducted in several major areas of interest at the School of Medicine which include, but are not limited to behavior, cancer, cardiovascular disease, endocrinology, environmental health, epidemiology, infections, immunology, neuroscience, respiration, toxicology and virology.

Fellowships are awarded on a competitive basis and currently provide \$300 per week for eight-to-12 weeks of full-time participation. These experiences are available to incoming students during the summer before their freshman year, and to medical students generally during the summers after their freshman year. On occasion, awards are made to students during the summer after their sophomore year or to seniors during the year.

STRTP funds are not available to students with master's or doctoral degrees, to those who are involved in doctoral dissertation research or to students with alternative sources of research funding. However, the program may supplement some alternate sources up to the level of STRTP fellows. Students selected to participate in the program are registered in and attend a summer colloquium (4 basic science credits) consisting of scientific seminars and lectures in computerized bibliographic search techniques, research methodology and presentation, and ethics of human and animal experimentation. These students also present their research to fellow students and faculty during the summer and on Medical Student Research Day.

The STRTP provides limited funded opportunities for students to conduct research in Rotterdam, The Netherlands, through the University of Maryland-Erasmus University Schools of Medicine Exchange Program. In addition, a year-out program is funded by a grant from the American Heart Association to the STRTP for those students who wish to immerse themselves in a research experience for a full year, normally between the sophomore and junior years.

The Short Term Research Training Program also offers summer research fellowships to undergraduate minority students, the purpose being to encourage underrepresented minority students to consider the possibility of a career in one of the health professions and/or biomedical research. The program provides students with a realistic understanding of the biomedical research environment through hands-on experience, contact with appropriate role models, and application procedures for professional and graduate schools. Twenty-four (24) positions are available for minority undergraduate students to conduct research for 10-12 weeks during the summer months at the University of Maryland at Baltimore campus and at the University of Maryland Baltimore County. Trainees will work under the direct supervision of experienced scientists and will receive \$250 per week for the 10-12 weeks period. Applications are due in the Office of Student Affairs by the last day of February.

Applicants for the undergraduate minority program must be enrolled in an undergraduate school and be in good standing at the time of application. Although minority students from any state may apply, preference will be given to Maryland residents attending a school within the state or elsewhere. Potential trainees must not have graduated at the time the traineeship begins and

should have a GPA of about 3.0 to be considered. It is strongly recommended that applicants will have successfully completed courses in biology and chemistry.

Additional information can be obtained by writing to the director or by calling 410-706-7476.

Inquiries should be addressed to:

Jordan E. Warnick, PhD
Director, Short Term Research Training Programs
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GRADUATE PROGRAMS

The University of Maryland Graduate School, Baltimore, created in 1984 by the merger of graduate education and research administration and development of the University of Maryland's Baltimore and Baltimore County campuses, represents a milestone in graduate education in Maryland. The linkage broadens the scope of graduate offerings in the region, enhances the collective research base and facilitates collaborative efforts that cross disciplines in which each campus has strengths.

The University of Maryland Graduate School, Baltimore, offers master's and doctoral programs in over 50 disciplines spanning health and human services; biological and chemical sciences; arts and humanities; social, behavioral and policy sciences; information and computer sciences; and engineering. New graduate programs have been designed to meet changing educational and professional needs in African American studies, dental hygiene, pharmacy administration, preventive medicine, human genetics, toxicology, chemistry, emergency health services, information systems/operations analysis, intercultural communications and molecular and cell biology.

The level of outside funding for research has risen dramatically in recent years with particular expansion of research taking place in the School of Medicine. Contract and grant awards in FY 91 reached \$98,554,281 million for the two campuses; \$10,000,586 in awards to the University of Maryland Baltimore County and awards of \$88,553,695 to the University of Maryland at Baltimore. School of Medicine awards represented \$77,493,739 million of this total, a 13 percent increase in funded research during FY 91.

The following graduate programs are offered in the biomedical sciences and related fields:

Anatomy	MS, PhD
Applied Physics	MS
Biological Sciences	MS, PhD
Biological Chemistry	MS, PhD
Biophysics	MS, PhD
Chemistry	MS, PhD
Epidemiology and Preventive Medicine	MS, PhD
Human Genetics	MS, PhD
Medical Technology	MS
Microbiology and Immunology	MS, PhD
Molecular & Cell Biology	PhD
Operations Analysis	MS, PhD
Pathology (Medical)	MS, PhD
Forensic Toxicology	MS
Pharmacology and Experimental Therapeutics	MS, PhD
Physiology	MS, PhD

Students pursuing graduate work must meet the requirements of the Graduate School and the department. Applications and a catalog of program descriptions and courses can be obtained by contacting:

The University of Maryland Graduate School, Baltimore
 660 West Redwood Street, Room 257
 Baltimore, Maryland 21201
 410-706-7131

RESIDENCIES AND FELLOWSHIPS

The Office of Graduate Medical Education coordinates and assists in the administration of University of Maryland at Baltimore programs of resident education and training. The activities of the office include organizing the accreditation process of residency programs, coordinating the National Resident Matching Program, developing central databases on residents and training programs and serving as institutional liaison for addressing residents' concerns, problems and policies.

Graduate specialty training for residents and fellows is offered through integrated and affiliated programs. The majority of clinical training occurs at the University of Maryland Medical System, the Baltimore Veterans Administration Medical Center and Mercy Hospital. A network of affiliated community and state hospitals with major commitments to the importance of a teaching environment provides much of the variety and depth offered to residents and fellows.

Programs are approved by the Accreditation Council for Graduate Medical Education (ACGME) comprised of the following member organiza-

tions: American Board of Medical Specialties, American Hospital Association, American Medical Association, Association of American Medical Colleges and the Council of Medical Specialty Societies.

Residency positions are filled through the National Resident Matching Program. Included are preliminary programs in medicine and surgery as well as categorical programs in anesthesiology, emergency medicine, general surgery, orthopaedic surgery, family medicine, internal medicine, neurology, obstetrics and gynecology, pathology, pediatrics, psychiatry and diagnostic radiology.

Resident and/or fellowship positions are available in the following specialty and subspecialty areas:

Department of Anesthesiology: anesthesiology

Department of Diagnostic Radiology: radiology, computed body tomography/ultrasonography/MRI, interventional and vascular radiology, neuroradiology, critical care trauma and musculoskeletal radiology

Department of Epidemiology and Preventive Medicine: preventive medicine, gerontology

Department of Family Medicine: family medicine and geriatrics (in conjunction with the Department of Internal Medicine, Division of General Internal Medicine and Geriatric Medicine)

Department of Medicine: cardiology, dermatology, endocrinology, gastroenterology, general medicine and geriatrics, geographic medicine, hematology, hypertension, infectious diseases, nephrology, oncology, pulmonary and critical care medicine and rheumatology

Department of Neurology: neurology and neurorehabilitation

Department of Obstetrics and Gynecology: obstetrics and gynecology, reproductive endocrinology, maternal fetal medicine and genetics

Department of Ophthalmology: ophthalmology

Department of Pathology: anatomic/clinical pathology, anatomic pathology, clinical pathology, neuropathology, immunopathology, forensic pathology and environmental pathobiology research

Department of Pediatrics: pediatrics, adolescent medicine, pediatric allergy, behavioral and developmental pediatrics, cardiology, endocrinology, infectious diseases and neonatology

Department of Psychiatry: psychiatry, child psychiatry and geropsychiatry

Department of Radiation Oncology: radiation therapy

Department of Surgery: general surgery, neurosurgery, orthopaedic surgery, otolaryngology, thoracic and cardiovascular surgery, urology, emergency medicine, pediatric surgery, plastic and reconstructive surgery, trauma surgery, trauma research and surgical endoscopy

Correspondence, applications and residency inquiries should be addressed to the chairperson of the respective department or program in care of:

University of Maryland Medical System
22 South Greene Street
Baltimore, Maryland 21201

PROGRAM OF CONTINUING MEDICAL EDUCATION

The School of Medicine, University of Maryland at Baltimore, is concerned with three phases in the education of physicians: undergraduate, graduate and post-graduate or continuing medical education. To fulfill its role in the last of these, the School of Medicine maintains a program of continuing medical education (CME) that offers substantive and accessible training to the state's physicians. The CME Program is administered by the assistant dean for continuing medical education and a full-time staff, with the assistance of a faculty advisory committee.

The programs offered are approved by the American Medical Association for credit in Category 1 (towards its Physician's Recognition Award) and by the Accreditation Council for Continuing Medical Education. To the greatest extent possible, programs are structured around the educational needs of practicing physicians. Both the type and content of the instructional programs, as well as their instructional design, are varied in order to satisfy the learning needs of as many physicians as possible. Courses and other educational activities sponsored by this program also can be used by physicians to meet the Maryland requirements for relicensure.

For additional information please contact:

Program for Continuing Medical Education
School of Medicine, University of Maryland at Baltimore
655 West Baltimore Street
Baltimore, Maryland 21201
410-706-3956

Resources

THE UNIVERSITY OF MARYLAND MEDICAL SYSTEM

The University of Maryland Medical System is a private, nonprofit institution comprised of the University of Maryland Hospital, the University of Maryland Cancer Center, the R Adams Cowley Shock Trauma Center and the Institute of Psychiatry and Human Behavior. Established in July 1984, it was previously an agency of the state of Maryland. The medical system is the primary clinical setting for the School of Medicine. It is dedicated to providing exemplary health care for the people of Maryland, to preparing students and physicians in training

for the practice of medicine and the allied health professions, and to carrying out research to improve the quality of health care.

Since its founding in 1823, the hospital has become a major tertiary care referral center that offers the full range of specialized medical and surgical services. In recent years, as the number of health care facilities in urban centers has decreased, the medical system has assumed increasing responsibility for its surrounding community. As a result, more than 100,000 city residents look to the University of Maryland Medical System as their primary source of health care.

The 747-bed hospital is one of the nation's busiest. In one year, it records approximately 23,000 inpatient admissions, 150,000 outpatient visits, nearly 40,000 emergency room visits and 2,000 births. Every day, nearly 5,000 people pass through the hospital's doors. The senior medical staff—more than 600 physicians—is comprised of the clinical faculty of the School of Medicine who supervise training of the more than 400 graduate physician house staff as well as the medical students.

Because of its combined professional and academic environment, many outstanding treatment programs and research facilities have been developed at the medical system. The R Adams Cowley Shock Trauma Center of the Maryland Institute for Emergency Medical Services Systems and the University of Maryland Cancer Center are two prime examples.

The R Adams Cowley Shock Trauma Center, linked with the statewide network of emergency communications, transportation and medical care facilities, is second to none. It provides high-speed emergency service to nearly 3,000 critically injured persons each year—the most severe multiple trauma cases in the state—with an impressive 92% survival rate. A heliport on the roof of the \$44 million R Adams Cowley Shock Trauma Center facilitates rapid transport of the most severely injured and acutely ill from around the state.

In the Cancer Center, collaboration between research scientists and research clinicians has resulted in notable efforts in treating breast, lung and blood-related cancers. It was at the Cancer Center that researchers pioneered the freezing of a leukemia patient's own platelets for later use during relapses. The center's physicians work closely with other oncology programs within the hospital, tailoring the balance among surgery, radiation and anti-cancer drugs for each patient's optimal treatment plan. A bone marrow transplant service will open in 1992.

The hospital's intensive care units serve seven medical specialties. Its neonatal intensive care nursery serves critically ill newborns airlifted from throughout Maryland.

An organ transplant service offers the latest surgical techniques for patients suffering from kidney, heart and pancreatic diseases and is the only one in Maryland offering pancreas/kidney transplants and lung transplants. The hospital recently installed new cardiovascular laboratories that support the state's comprehensive cardiology program for children and adults. The Stroke Data Bank, part of the medical system's Stroke Center, is one of only four in the United States. The institution's neurosurgery division has attracted national attention for its innovative techniques in the treatment of brain tumors. A Gammaknife

Center, due to open in 1992, will allow patients with inoperable brain tumors a new chance for survival. The high-risk pregnancy, multiple sclerosis and magnetic resonance imaging centers offer the most advanced technology possible.

Coexistent with these technologies is the medical system's commitment to providing excellent primary care as well as specialized medical care. This is demonstrated by the presence, since 1984, of University Health Center, an ambulatory care facility that incorporates family practice, general adult medicine and several specialty services. It is located one block from the medical system building. Ambulatory care also is provided in the hospital by separate emergency units for children and adults.

The University of Maryland Medical System has grown both professionally and physically during the years. Today, through partnerships with the university's professional schools, the medical system is the training site for pharmacists, social workers, dentists, nurses and other health professionals and technicians. This interprofessional environment is a unique and valued characteristic of the University of Maryland Medical System.

AFFILIATIONS

Recognizing the importance of providing excellent clinical experiences with stimulating faculty and mentors, the School of Medicine has developed a comprehensive network of affiliations designed to encompass the continuum of medical care including ambulatory, acute hospital, home care, rehabilitation and chronic care. In all programs medical students are trained by and fully supervised only by School of Medicine, University of Maryland at Baltimore faculty.

Over the past five years a significant effort to coordinate, expand and improve the ambulatory care experience has resulted in an extensive ambulatory care network of opportunities. Clinical experiences are offered in multi-disciplinary teaching clinics, faculty practices, community clinics, private practices and hospital-based ambulatory care programs. Model geriatric clinical education programs, designed at three facilities with large cohorts of elderly patients, serve as stimulating educational experiences where computer-assisted learning augments the faculty preceptor patient experience.

Academic tertiary care experience demonstrating state of the art technology and ongoing exciting clinical research is offered at the three major affiliates; namely, the University of Maryland Medical System, the Baltimore VA Medical Center and Mercy Hospital. Additionally, five community hospitals with major commitments to the importance of a teaching environment serve as outstanding opportunities for primary and secondary health experiences. These community hospitals attract highly competitive interns and residents who wish to train in a community hospital atmosphere.

A successful network of community, state and federal psychiatric facilities has resulted in a widely acclaimed statewide program for psychiatry training. Special clinical research experience in psychiatry is additionally offered at the Institute of Psychiatry and Human Behavior and at the Perry Point VA Medical Center.

Experience in rehabilitation, home care and chronic medical care is offered through six facilities, each offering special aspects of expertise for those who wish to pursue psychiatry, neuro-rehabilitation and geriatrics.

The following training centers have formal institutional level affiliations: University of Maryland Medical System (includes Shock Trauma and Cancer Center), Baltimore Veterans Affairs Medical Center, Union Memorial Hospital, Mercy Medical Center, Sinai Hospital of Baltimore, James Lawrence Kernan Hospital, St. Agnes Hospital, Maryland General Hospital, Francis Scott Key Medical Center, Johns Hopkins Hospital, Delray Hospital, Greater Baltimore Medical Center, Harbor Hospital Center, Children's Hospital of Baltimore, Franklin Square Hospital, Deaton Medical Center, National Orthopaedic Hospital, York Hospital (Pa.), Walter P. Carter Center, Springfield Hospital Center, Spring Grove Hospital Center, Sheppard and Enoch Pratt Hospital, Inc., Montebello Rehabilitation Center and Cumberland AHEC.

BALTIMORE VETERANS ADMINISTRATION MEDICAL CENTER

In November 1992 a new 324-bed VA Medical Center will open adjacent to the medical school and UMMS. Designed to additionally support a large outpatient program with extensive primary care as well as subspecialty experiences and ambulatory surgery, the new VA has been designed as a flagship facility. The first radiology service in the nation to offer a completely filmless program has been made possible by new advances in computer archiving and digital processing of images. Diagnostic quality radiographs are available on over 80 monitors throughout the medical center, providing expanded opportunities for student and house staff education and improved patient care.

A fully computerized patient information system, including bedside terminals, allows for ease of patient care and reduced nonproductive time for students, as well as instantaneous clinical queries for clinical research and continuous improvement in quality of patient care. Major increases in support staff assigned to house staff teams has resulted in decreased "scut" work activities of students and residents, as support staff is more frequently available for routine phlebotomy, intravenous line adjustments, escort services and clerical support services. A major reconfiguration of nursing and support staff has been combined with computer designed programs to increase the efficiency of the medical care process so that students, house staff and faculty can better spend their time on direct rather than indirect patient care and on stimulating educational and clinical research areas rather than on cumbersome support delivery problems.

There is close integration of the faculty, resident and undergraduate levels with the School of Medicine in the disciplines of medicine, surgery, psychiatry, neurology, anesthesiology, pathology, radiology, rehabilitation medicine, geriatrics and ambulatory care. Special programs in women's health care, endoscopic surgery, low-vision assistance, stroke therapy and a tertiary oncology center are planned for the new facility. Forty-two research investigators have funded

research programs in areas including infectious disease, geriatrics exercise physiology, cardiology, immunology, neurology, oncology and schizophrenia.

AREA HEALTH EDUCATION CENTER PROGRAM

One of the University of Maryland at Baltimore's commitments to improving health care and delivery programs in primary care is the Area Health Education Center (AHEC) program.

The AHEC program has been developed to provide a comprehensive health care education program for undergraduate and graduate medical students, as well as for students from the other UMAB professional schools. AHECs are "multiple health education and training centers that attract students, interns and residents to the several geographic areas, thereby attracting increased numbers of practicing physicians, encouraging development of health care facilities, providing for the training of additional numbers of allied health care professionals and increasing capabilities for the existing program of graduate and continuing medical education and health training."

The University of Maryland at Baltimore AHEC is located in Cumberland, a rural community in Western Maryland. This center affords students the opportunity to understand and experience the valuable and rewarding benefits of delivering primary health care in a rural environment.

It is a matter of school policy that students are required to spend eight weeks of their senior year in clinical education at an ambulatory site. Some students elect to spend this mandatory rotation at this site. In addition, senior medical students may choose a rotation here as an elective in primary care. It is hoped that these experiences will encourage students to consider practice in similar settings and that students will gain a firm appreciation of the special health needs of rural populations.

OFFICE OF MEDICAL EDUCATION

The Office of Medical Education serves all departments of the medical school as a consultative unit to the following areas:

- Instructional design, implementation and evaluation.
- Media systems design and hardware installation, e.g., operating room TV.
- Faculty development regarding instructional techniques, design, evaluation and technology.
- Educational resources including audiovisual aids, instructional television and computer-assisted instruction.
- Development and implementation of computer-based instructional systems.

- Assistance in development of special educational programs.
- Assistance in curriculum development and evaluation of curricular programs.
- Evaluation of instructional systems and techniques.
- Coordination of library facilities to include the storage and retrieval of all nonprinted educational material and software; operation and maintenance of the Learning Resources Center and the Clinical Media Library and the Computer Learning Center.
- Maintenance, distribution and operation of projection and related audio-visual equipment for use in teaching.
- Tutorial assistance and study skills.
- Research in medical education, instructional design, evaluative techniques and educational technology
- Production and distribution of videotaped programs for local, regional and national use.
- Consultation with the faculty and staff of the medical school as well as the other UMAB schools in all areas of media production.
- Classroom scheduling.

The Office of Medical Education sponsors four academic support services for medical students. These services are administered by the assistant dean for medical education.

Prematriculation Summer Program: The purpose of this program is to provide an academic orientation to the medical curriculum to aid in making the transition from undergraduate education to medical school. This six-week program includes one week of learning skills workshops and class orientation, four weeks of classes simulating the first semester schedule and final exam week. Classes are taught by seven medical students who participate in an intensive one-week teacher training program and receive elective credit. Faculty mentors advise tutor/teachers regarding course content and resources. Enrollment is voluntary; full participation of enrolled students is mandatory. Up to 20 entering freshman may participate.

Prematriculation Workshop: The purpose is to provide an academic orientation to the medical curriculum for all entering freshman students. This program

is a one-day learning skills workshop presented prior to orientation and registration. Attendance is voluntary.

Academic Monitoring: The purpose of this activity is to identify and contact first- and second-year medical students who show (a) poor academic performance—to improve their current course performance through appropriate intervention; and (b) successful performance—to identify potential tutors. Contact with students is initiated as soon as possible following each examination.

Early Assessment Exam: The purpose of this exam is to initiate academic monitoring to the freshman class as early as possible in the freshman fall semester, prior to most course exams. Two and one-half weeks after classes begin, short exams in biochemistry, gross anatomy, and histology are administered during a half-day session; results are distributed to students immediately. Attendance is mandatory but results are not used in grading.

Academic Counseling: The purpose is to identify problems contributing to poor academic performance, and to recommend appropriate resources for corrective or supportive action to improve academic performance. Direct support regarding learning skills, time-management and exam-taking; and referral to other appropriate university services and offices are part of the program. All enrolled medical students are eligible to participate.

Peer Tutoring: The purpose of this service is to provide tutorial assistance for first- and second-year medical students to improve academic performance in basic science courses, overall retention rate and, ultimately, performance on licensure examinations. Medical student tutors provide individual and group tutorials at no cost to students. Tutors are approved by faculty and participate in a tutor-training program.

Board Preparation: The purpose of this activity is to provide structured review activities to improve performance on NBE Part I. Two activities are scheduled at the beginning of the spring semester: half-day workshop—exam-taking techniques and strategies for preparing for boards, followed by a one-day mock board—self-assessment to set priorities for review. Participants are enrolled medical students eligible to sit for NBE Part I.

Learning Resources Center and Clinical Media Library: The basic sciences media library provides students with access to many self-instructional materials including videotapes, slide-tapes, computer-assisted instruction, lecture tapes and reference books. A clinical media library, located in the Frank C. Bressler Research Building, houses materials similar to those of the Learning Resources Center, but with a clinical orientation.

Computer Learning Center (CLC): To make the benefits of information technology available to medical students, the School of Medicine staffs maintains the Computer Learning Center (CLC). Classroom instruction is provided in addition to individual access to microcomputers and support of their use by medical students and students of other schools. The CLC is located on the second floor of the MSTF.

The Office of Medical Education also provides illustrative and photographic services.

Illustration: Services include comprehensive renderings of surgical and clinical techniques, anatomical renderings, statistical charts and other graphic representation. This section also handles simple and comprehensive design and finishing of flyers, brochures, programs and posters; and layout and paste-up for offset printing and photographic copying. In addition, they design displays and exhibits. Most of the above is accomplished through computer technology.

Photography: The division handles photographic copying of flat material such as written matter, x-rays, laboratory tracings and data; photography of specimens, equipment set-ups, surgical, clinical and laboratory activities; and portraiture for school-related purposes. The division also does slide duplication and motion picture photography and acts as a collection station for commercial processing of color photography. Computer-developed color slides are a major product of the photography laboratory.

HEALTH SCIENCES LIBRARY

The Health Sciences Library is the first library established by a medical school in the United States and a recognized leader in state-of-the-art information technology. It is the Regional Medical Library for 10 states, the District of Columbia, Puerto Rico and the Virgin Islands as part of the biomedical information network of the National Library of Medicine.

The library contains more than 290,000 volumes including 3,100 current journal titles, and is ranked in size among the top 15 health sciences libraries in the country. The library's online catalog allows users to look for materials by title, author, subject, key word, call number, series, meeting name and organization name. The online catalog can be accessed from any computer terminal on the UMAB campus that is linked to the campus network or from any dial access terminal.

The library currently supports several computerized search services: MaryMED, English language journals owned by the library and indexed in Index Medicus in the last three years, a subset of the National Library of Medicine's MEDLINE database; HSL Current Contents®, recent citations from sections of the print version; CD-Rom Lan, containing PSYCLIT, CINAHL, MicroCat and

Books in Print; CRABS (Computerized Reference and Bibliographic Services); and BRS AfterDark.

In addition to standard reference services, many innovative educational programs are available throughout the Health Sciences Library including information literacy and management seminars to help patrons to better access, evaluate and manage their information. Information specialists are assigned as liaisons to every school where they participate in program design to meet the needs of the school and in collection development in their subject areas within the library. There is also an active consultation program where students can go for one-on-one help to aid in library research.

INFORMATION SERVICES

Microcomputer support for faculty, staff and students as well as mainframe research and instructional computing on the IBM 4341 are provided through Academic Computing/Health Informatics (ACHI), a department of Information Services at the University of Maryland at Baltimore. Computers in several Technology Assisted Learning (TAL) Centers are available for use by the campus community and for training in health informatics applications packages.

A full complement of programming and statistical languages such as SAS, SPSS-X and BMDP are available for the mainframe computer. ACHI will lease both SAS/PC and SPSS/PC+ microcomputer software packages at nominal rates.

Free worldwide electronic mail accounts, via the Professional Office System (PROFS), enable faculty, staff and students to exchange notes, files and documents with others both at UMAB and internationally via Bitnet, which links computers at more than 500 academic institutions.

MEDICAL ALUMNI ASSOCIATION

The Medical Alumni Association has, since 1895, served all graduates, students, faculty, staff and physicians affiliated with the School of Medicine.

Located in Davidge Hall, 522 West Lombard Street, the Medical Alumni Association office is open weekdays. Among its many activities, the association coordinates the Alumni Reunion in early May, and publishes the quarterly *Bulletin*. The Medical Alumni Association sponsors an annual social event for each medical school class.

Since the association inaugurated the Annual Giving Drive in 1978, donations totaling more than \$4 million have been raised, thanks to the hundreds of alumni phonathon volunteers who have annually called on their classmates for donations. One million dollars from alumni supported the restoration of Davidge Hall in 1982. Lectures, research and student loans funded by alumni contributions provide a means to enrich and implement the programs and goals of the School of Medicine on a daily basis.

Student Life

OFFICE OF STUDENT AFFAIRS

The Office of Student Affairs is designed to provide guidance, advice, help and administrative services to students enrolled in medicine. In addition, the office is responsible for monitoring student registration, progress and advancement, graduation and all aspects of student life related to undergraduate medical education. To this end, the office employs one full-time associate dean and one full-time assistant dean, two part-time assistant deans, a coordinator and clerical staff.

While the entire staff is available to offer assistance to all students, some staff members also assume a specialty area within their overall functions. These specialty areas include minority affairs, senior elective advising, student fellowships, national residency programs advising, counseling and administration of the Vertical Advisory System.

Office of Minority Affairs. The School of Medicine is firmly committed to significantly increasing the number of underrepresented minority students and faculty. Accordingly, the school has a strong outreach recruitment and retention program to attract and graduate minority students who are African Americans, native Americans, mainland Puerto Ricans and Mexican Americans. The school is actively involved in the Association of American Medical Colleges' Project 3,000 by 2000, which is designed to increase the number of underrepresented minority medical students in all U.S. medical schools to 3,000 by the year 2000. Recruitment and academic enrichment activities are provided for students at the high school, undergraduate and medical school levels.

The Office of Minority Affairs works cooperatively with the Office of Admissions, the Office of Academic Development, the Office of Financial Aid and entities in the University of Maryland Medical System (University Hospital) to carry out this mission. Activities include information dissemination to all segments of the public, paid summer research preceptorships and volunteer opportunities at the School of Medicine and University of Maryland Medical System. In addition, the office also assists in the school's minority faculty development program and community outreach efforts that will offer exposure to health related and research oriented career opportunities.

The Office of Minority Affairs also assists in the school's minority faculty development program and in community outreach efforts. For additional information contact:

Dr. Robert L. Harrell, Jr.
Office of Student Affairs
School of Medicine, University of Maryland at Baltimore
655 West Baltimore Street
Baltimore, Maryland 21201
410-706-7689

Elective Program. The Office of Student Affairs compiles course offerings, schedules courses and changes of electives, and provides for both evaluation of a student's performance during electives and evaluation of the elective courses taken.

Residency Planning. The office maintains a residency advisement program that includes counseling, referral to faculty, alumni and community resources and workshops on residency selection provided during the junior year. Recent graduates are surveyed annually so that feedback from a number of residency programs of interest to our graduates is kept as current as possible.

Vertical Advisory System. At the beginning of the freshman year students are assigned two faculty advisors. Generally, one of the advisors is in the basic sciences and at least one is a physician. Each pair of advisors is usually assigned three or four incoming students per year with the intention that the relationship will continue through the four years of medical school. The advisory system provides a helpful, ongoing interchange concerning academic, social, personal and career problems and opportunities.

Human Dimensions in Medical Education (HDME) Program. The HDME Program provides opportunities for informal activities among students and faculty outside the classroom setting. These range from social gatherings to small group discussions of concerns and feelings related to the personal and professional aspects of medical education and practice.

Students may elect to participate in the HDME Program at any point in their medical school career. Many enter the program by attending the prefreshman orientation retreat held in late August. The retreat is attended by students from all levels of training, faculty members and in many cases spouses or close friends. Participants thus are provided an opportunity to get acquainted in an informal and intimate off-campus setting. Much of the time at the retreat is spent in intensive small group sessions. Topics of discussion are determined in each group, but typically include adjustment to medical school, the impact of a medical career on domestic life, and the problem of setting priorities among various professional and personal demands. Recreational activities also are included in the four-day experience.

Students in the HDME Program also participate in the Vertical Advisory System (see Office of Student Affairs), but normally are assigned faculty advisors within the HDME program.

HDME was conceived at The Center for the Study of the Person in La Jolla, California. The program is planned and operated locally by student-faculty committees. One goal of the program is to provide an environment in which students and faculty advisors can develop a bond during the four years of medical school. Another desired outcome is the development of effective communication and listening skills that will enable medical students, house officers and faculty members to become better health care providers.

Parents' Day. Usually in mid-fall, freshman students are asked to notify the Office of Student Affairs of two or three people they would like to have invited to Parents' Day—generally, parents or partners. Following a continental breakfast, those attending hear presentations from the dean, the associate deans

for student affairs and medical education, and senior faculty members representing some of the major medical specialties. Upperclass students give their versions of life in the preclinical and clinical years, and a student-spouse discusses medical school from the viewpoint of a "significant other." There is time for informal discussion with the presenters and other members of the faculty, and the morning ends with a tour of Davidge Hall. Family members often travel substantial distances for this event and it provides an opportune time to show them around campus and the Baltimore area during the afternoon.

STUDENT GOVERNMENT

The Student Council is the official representative body for medical students. The council consists of its president, vice president, secretary and treasurer and two representatives from each class and the class presidents. The group performs several tasks that are important to the proper functioning of the many student organizations. Social events for the entire medical school, including student-faculty wine and cheese parties, are funded and organized by the council. Election of class officers is handled by the Student Council as well. The council serves as a liaison between the administration and the student body should the need for such a liaison arise.

An important role of the Student Council is the budgeting of student activities fees funds. The council votes on the distribution of funds to the various student organizations based on such factors as proposed costs of planned activities, benefit to the medical school community and the number of students involved in the organization.

STUDENT ORGANIZATIONS

Alpha Omega Alpha (AOA). Alpha Omega Alpha, the national medical honor society, has a chapter at Maryland comprised of students who are elected to membership at the end of their junior year or beginning of their senior year. Election to AOA is based on scholastic achievement, service to the school, qualities of leadership, integrity and fairness to colleagues. Members coordinate programs and lectures with the goal of furthering academic interest and curiosity. Programs of recent years have included a lunchtime lecture series on topics in the history of medicine, an EKG interpretation course offered at the VA Medical Center and sponsorship of a clinical visiting professorship.

American Medical Student Association. The University of Maryland Chapter of the American Medical Student Association (AMSA) offers the opportunity to become actively involved with a group of dynamic, concerned medical students on the local and national levels. AMSA is involved in many service activities; microscope and used book sales, coordination of the noontime films and lectures as well as the student telephone and housing directories, orientation activities, workshops, projects and parties. Fundraising projects help to defray

expenses of members attending workshops and regional and national meetings.. On the national level, AMSA promotes the interest of public health and the medical students serve as a forum and information clearing-house for issues of major importance. Benefits to AMSA members include a four-year subscription to *The New Physician*, special interest task force newsletters, informational booklets, discounts on medical texts, life insurance policies, the AMSA Mastercard, the "HEAL Deal" for repayment of HEAL loans at lower interest rates, a new low-interest loan program with increasing monies available each successive year of school and unique educational experiences both at home and abroad.

American Medical Women's Association (AMWA) Student Branch. The AMWA Student Branch at the University of Maryland is a dynamic group responsive to the needs of the female medical student. While its first commitment remains to provide support and promote friendship among students, faculty and physicians, AMWA also provides a network where students can meet and discuss issues such as lifestyles in medicine, career choices, women's health and political issues important to women and the student body at-large. Local activities include potluck dinners where special guest speakers address issues, monthly noon-time business meetings and get-acquainted gatherings with students and faculty.

Asian Professional Students Association. The Asian Professional Students Association (APSA) was formed by a group of medical students in 1984, and since then the association has grown to include members of other schools at UMAB. The APSA is open to all students, teaching staff and employees, regardless of race, cultural background, sex or country of origin. The goals of the association are to encourage dialogue among fellow students of different cultural backgrounds and to provide a platform for those who appreciate Asian culture. APSA also sponsors education and social activities for its members and friends.

Big Sib Program. Each year an upperclassman (usually a sophomore) "adopts" an entering freshman as his/her little sib. Newly admitted students receive correspondence from their fellow big brothers/sisters during the spring semester prior to their entry. The program is sponsored by students with support of the Admissions Committee, and is designed to allow entering students to address their questions and concerns to fellow students who have already experienced "life of the medical student."

Christian Medical Society. The Christian Medical Society (CMS) is a local chapter of a national organization that exists to provide support and encouragement to Christian medical students and physicians and to promote Christian practices and ideals within the medical community. The group meets in the evening once a week for fellowship, prayer and discussion. A meal is shared every other week. Discussion topics for the meetings include bible study, short-term missions, ethics, Christian family life within the medical profession and evange-

lism. In addition, the CMS provides volunteers to help staff the Baltimore Rescue Mission, which gives medical aid to the homeless.

Family Practice Club. The Family Practice Club is sponsored by the Maryland Academy of Family Physicians and the Department of Family Medicine. Membership fees are paid by the Maryland Academy and members receive monthly professional journals free of charge. Four official meetings are held each year during which students have the opportunity to meet informally with practicing family physicians. These meetings are usually informal panel discussions focusing on subjects relevant to family practice which are not covered in the academic curriculum. The club also encourages student leadership at state and national levels.

Gertrude Stein Medical Society. The Gertrude Stein Medical Society is a group of medical students whose goal is to foster support among gay and lesbian students and to encourage interaction and education among all students at the university. The group seeks to help other students and faculty understand the special needs of the gay and lesbian community through education and community service. The group meets bimonthly with potluck dinners and other social events.

Human Dimensions in Medical Education (HDME). The Human Dimensions in Medical Education (HDME) Program sponsors a four-day, preorientation retreat in Western Maryland each August for incoming freshmen that is run jointly by upperclass students and faculty members. The retreat enables incoming students to get to know each other and their advisors in an informal setting—prior to the student orientation “downtown.” Each student is assigned to a small group of entering freshmen and upperclass students led by one or both of the faculty members who will serve as the student’s advisors for the duration of medical school. Emphasis is placed on meeting others as people, apart from traditional “professor/medical student” roles. Spouses and “significant others” of students and faculty are welcome. They, too, are assigned to small groups. In addition to small group meetings, retreat participants spend time together at meals, parties and at evening events. Unscheduled afternoons may be spent enjoying waterskiing, horseback riding, hiking, golfing, swimming and playing in the nearby waterfall.

Jewish Medical Student Organization. The Jewish Medical Student Association encourages all medical students, regardless of specific affiliation (i.e., orthodox, conservative, reform or non-Jewish) to join and participate in the group’s activities. The association works closely with the Jewish Community Center’s Office for Graduate Studies, which provides sponsorship for many of its activities, including Friday night dinners, talks on Jewish medical ethics and the building of a sukkah. The association also works with other schools on campus and in the Baltimore area to plan joint activities.

Maryland State Medical Student Association. The Maryland State Medical Student Association (MSMSA) is a component of the Medical and Chirurgical

Society (Med-Chi) of the state of Maryland, which is a state component of the American Medical Association. MSMSA is involved in issues of health care, medical education and peer review, especially in the state of Maryland. MSMSA and AMA memberships are usually solicited together and membership benefits include subscriptions to the *Maryland Medical Journal* and *AMA News*. MSMSA provides active student representation in Med-Chi and the AMA.

Medicine as a Second Career. The goal of this organization is to foster a healthy and successful transition from the working world to medical school. Networking with peers provides an opportunity to learn vicariously. An additional goal is to foster positive student and faculty relationships. Medical students who are non-traditional with respect to their personal and professional background are exceptional in many respects. The magnitude of the sacrifices and hence the motivations are immense for second-career students. People who come to medical school after an interlude building a career and/or raising a family have special concerns; they also bring great personal and professional assets to their potential as physicians.

Organization of Student Representatives. The Association of American Medical Colleges (AAMC) was founded over 100 years ago to improve the quality of American medical education. It now includes membership of 127 medical schools, 85 academic societies such as the American College of Physicians and 435 teaching hospitals. It maintains numerous data sources available to its members and works cooperatively with other medical organizations such as the American Medical Association. It provides information and testimony to the U.S. Congress and other federal agencies concerning medical and health-related issues. The Organization of Student Representatives (OSR), the AAMC's student voice, is composed of one student representative from each participating medical school. OSR members gather at an annual meeting each autumn to discuss matters of concern to the nation's medical students and to elect an Administrative Board. The 12-member Administrative Board meets quarterly with the boards of other AAMC Councils to formulate AAMC programs and policies reflecting student views. OSR business is also conducted at regional spring meetings. The OSR delegate channels AAMC information to the student body on medical education issues such as curriculum changes, the residency match and student indebtedness.

The Other Half. "The Other Half" is a support group open to all medical students and their significant others (i.e., husbands, wives, boyfriends, girlfriends) who are interested. The Other Half's goal is both social and supportive. Maintaining a relationship while in medical school can be difficult and knowing other people in the same situation can be helpful to both students and their partners. Gatherings such as the potluck dinners, wine tasting, pizza party and wine and cheese parties have been popular activities.

Student Environmental Association. Members meet informally several times throughout the year to address environmental issues of interest. In the past members have been concerned primarily with a recycling campaign that collects aluminum and paper products donated by medical and graduate students. Proceeds from such collections are donated to neighborhood shelters for the homeless. Members also plan outings to beautify public parks, reclaiming metals and paper in the process. The club discusses issues of the environment on local and national levels and plans to invite several outside authorities to suggest how medical students may contribute to environmental movements that they support.

Student National Medical Association. The University of Maryland Chapter of the Student National Medical Association (SNMA) is a black medical student organization that seeks primarily to provide academic and social support for minority medical students at the University of Maryland at Baltimore. The SNMA organizes study groups, provides valuable course information and review material, and facilitates organized discussions between upperclassmen and entering students on course requirements and strategies.

The SNMA also seeks to involve itself in health and educational activities that benefit the surrounding community and its youth. In past years the SNMA has been involved in tutoring local high school students, health screening programs in the community and in presentations informing high school and college students of medical school opportunities. In addition, the SNMA has sponsored activities for black history month that have included seminars and films. SNMA is active in programs that promote greater interaction among black students, physicians, faculty and alumni.

PUBLICATIONS

Academic Handbook. The *Academic Handbook* is the "official word" on medical school policy and life, written by those who run the various programs described—administrators, faculty, students. Although the book is prepared through the Office of Student Affairs, student participation and feedback contribute significantly to its effectiveness.

AMSA Directory. With financial support from the Office of Student Affairs and the Office of Admissions, the American Medical Student Association (AMSA) at UMAB compiles a student address and telephone directory each fall. The book is available to all medical students at no cost.

Snowdays. *Snowdays* is a booklet written by the freshman class for entering freshmen. Designed to acquaint students with the University of Maryland at Baltimore and surrounding areas and metropolitan Baltimore, it includes information on housing, eateries and entertainment that would be helpful to people new to the city. *Snowdays* was conceived in the hope of providing freshmen with information that might prove useful prior to their starting the school year.

The Yearbook (*Terra Mariae Medicus*). Since 1896 *Terra Mariae Medicus* has provided wide coverage of student life. It is a collection of moments and memories from the four years of medical school put together by the members of each senior class. Each senior receives a yearbook, the cost of which is included in the student activities fee.

Zebra Guide. Moving from the basic science classrooms to the third- and fourth-year clinical clerkships is a major transition. The *Zebra Guide* is an introduction to the clinical years of medical school. It was written by students for students. The guide contains helpful hints in areas such as getting organized, medical records, roundsmanship and formal communications. It also contains step-by-step instructions for various procedures performed during clinical clerkships. The *Zebra Guide* is meant to enhance interaction among students, residents and attending physicians during clinical clerkships.

INSTITUTIONAL GOVERNANCE AND PLANNING

The Committee System. Several committees are actively involved in shaping the School of Medicine, particularly the curriculum and other essential aspects of medical education, and students have a voice on these committees. The following committees/councils include students in their memberships.

Curriculum Coordinating Committee (CCC) and Subcommittees. The task of the Curriculum Coordinating Committee is to continually study and evaluate the curriculum and methods of instruction, to make recommendations concerning changes and innovations in the curriculum and instructional procedures, to make a continuing study of the student achievement evaluation process and to recommend changes when necessary. In addition, the CCC Subcommittees, i.e., Year I, Year II, Clinical Years and the Electives Committee, each include two student representatives elected by their classmates.

School of Medicine Council. Through the School of Medicine Council, faculty and students participate in the development of a variety of medical school policies. In addition to their role as policy makers, council members also hear status reports from committees appointed by the dean. These include the reports of the Curriculum Committee, the Annual Admissions Report and the reports of the various search committees. The School of Medicine Council meets monthly during the academic year, offering students an excellent opportunity to develop an understanding of the issues affecting the operation and plans of the medical school. The council has approximately 80 voting members, 11 of whom are students.

Judicial Board. Acceptable behavior within the academic community, including proper behavior on examinations, falls within the purview of the judicial review system and its functioning body, the Judicial Board. The system and oper-

ation of the board are defined in a document entitled "Statement of Ethical Principles, Judicial Review System and By-Laws of the Judicial Board." The board consists of a chairperson appointed by the dean and representatives of the different groups in the medical school community. Any member of the community who directly witnesses an act that he or she deems unethical should report the incident in a signed letter to the chairman of the Judicial Board. The board will then investigate the issue and hold hearings, as defined in the aforementioned document. Findings of the board and its recommendations with respect to the accused are forwarded to the dean. Three student representatives, one each from the sophomore, junior and senior classes, are appointed by the appropriate class presidents.

Ethical Advisory Committee (University Hospital). This state-mandated committee is composed of about 25 physicians, nurses, social workers, administrators, clergy, attorneys and other personnel, and welcomes the input of students and residents as nonvoting participants. The committee advises hospital staff and families on request regarding difficult ethical decisions such as life support for terminal patients, and also helps develop hospital policy regarding such critical situations. The committee also serves an educational function to hospital staff and reviews legal and legislative decisions.

Special Task Forces. On occasion, special committees, task forces and retreats are set up to examine school policies or curriculum issues. Where these issues have direct relevance to students, the classes are frequently invited to send representatives to these functions. Major changes in policy or curriculum typically take two or more years to plan and implement, and this may be frustrating to students who will be members of each class for only one year. At the same time, however, each group of entering students reaps the benefits of changes to which their predecessors have contributed and now have the opportunity to leave a similar legacy to their successors.

STUDENT AND EMPLOYEE HEALTH

Health care for medical students is available at Student and Employee Health, UMAB Professional Building at 419 West Redwood Street. Monday-Friday and after-hour coverage is provided (24 hours a day, 365 days a year) by the faculty of the Department of Family Medicine.

Counseling services are provided at the Counseling Center. Stress, relationships and marital problems, loss of a loved one, eating disorders, family concerns and stressful changes in school or home life are the most common problems experienced by students. The center offers individual and group counseling weekdays with expanded hours to accommodate individuals needing evening appointments.

At registration all students must pay a health fee that covers all regular visits to Student and Employee Health. A wide range of services is offered,

including routine medical care, minor surgery and gynecological care. Birth control pills are available at a reduced cost for students receiving their care through Student and Employee Health. Students are responsible for the cost of any consultations outside Student and Employee Health, including any diagnostic or lab charges not covered by insurance.

All students are required to have health insurance with certain minimum benefits. An excellent policy is available through UMAB. At registration, all full-time students must either purchase the UMAB policy or waive it by showing proof of comparable coverage. The deadline for waiving the UMAB policy is in late September. If proof of comparable insurance is not received at Student and Employee Health by that time, the UMAB policy must be purchased for each month the waiver is not presented. Demonstrated proof of comparable insurance is required each year the UMAB policy is not purchased.

All new students are required to complete a Report of Medical History and an Immunization Record form that documents immunity to childhood illnesses. Students failing to present these completed forms as freshmen will not be permitted to register for the sophomore year. All incoming students will be immunized against Hepatitis B, an occupational illness of physicians and health care providers. A series of three immunizations is given and its cost is included in student fees.

All family members can be seen at Family Medicine Specialists, the faculty practice of the Department of Family Medicine. The family physicians provide care for the entire family, including obstetrical and pediatric care.

HOUSING

Baltimore's a fun, friendly city with many affordable and convenient housing options. The brochure "Living in Baltimore" describes on- and off-campus options for UMAB students; it is available through most UMAB admissions offices or by calling the Residence Life Office at 410-706-7766.

On-campus living options include furnished university-owned apartments and dormitory style accommodations plus unfurnished apartments in a half-dozen privately owned loft district buildings adjacent to the campus. The Baltimore Student Union and Pascault Row Apartments are the two university owned on-campus housing complexes.

Many students choose to live in neighborhoods surrounding the UMAB campus. A wide range of rooms, apartments and home rentals are available throughout the metropolitan area. The Student Life Office, located in the Baltimore Student Union, keeps a listing of available rooms and apartments.

Application forms and information are available by writing:

Director of Residence Life
University of Maryland at Baltimore
Room 108, 621 West Lombard Street
Baltimore, Maryland 21201

ATHLETIC FACILITIES

The campus Athletic Center, on the tenth-floor of the Pratt Street Garage, is equipped with a squash court; two handball/racquetball courts; two basketball courts which are also used for volleyball; and a weight room with two 15-station universal gyms, stationary bikes and rowing machines. Men's and women's locker rooms each have showers and a sauna.

Men's basketball, co-ed intramural basketball and volleyball teams compete throughout the fall and spring semesters. Squash and racquetball tournaments also are held in the facility.

BALTIMORE STUDENT UNION

The Baltimore Student Union is a cultural and social center for students, faculty, staff, alumni and guests. Activities and services of the union include meetings, dances, receptions, movies and other forms of indoor activity. The multi-purpose Baltimore Student Union houses the campus offices of Student Affairs, the University Student Government Association, Credit Union, Pub, bookstore and lounge space, in addition to dormitory-style accommodations for UMAB students.

PARKING

On-campus parking is available to students. Commuters may park in the Lexington Garage (Lexington and Pine Streets) between 6 a.m. and 11 p.m. The garage operates on a first-come, first-served basis. Commuting students must obtain a parking permit from the Parking Services Office then pay the established daily rate when parking in the garage.

Students who live in on-campus housing pay for parking by the semester or year and are guaranteed 24-hour parking in a garage adjacent to their residence facility. For more information about parking on campus, write:

Parking Services Office
University of Maryland at Baltimore
737 West Lombard Street
Baltimore, Maryland 21201
or call 410-706-6603

Course Offerings

Anatomy

Department of Anatomy
Professor and Acting Chairman
Marshall L. Rennels, PhD

The Department of Anatomy provides instruction in all of the anatomical sciences: gross anatomy, microscopic anatomy, neurologic anatomy and developmental anatomy. Courses are offered to medical students and to graduate students working toward an MS or PhD degree. The goal of the department in medical education is to provide a basic understanding of the structural organization of the human body as related to normal function. Whenever possible, important clinical implications and research applications of the material under study are emphasized. The study of human structure includes all levels from gross morphology seen in the dissecting room to the fine structure as revealed with the electron microscope. The neuroanatomy course is taught in an integrated format with neurophysiology, neurochemistry, neurobiology and clinical neurology.

A knowledge of anatomy is essential to the proper understanding of clinical practice. Since a full understanding of any basic science can best be obtained by direct observation, the anatomy department emphasizes laboratory instruction in its gross, microscopic and neurologic anatomy courses. By integrating the theoretical lectures with the practical laboratory assignments, the student is provided with a comprehensive and meaningful treatment of the subject.

RESEARCH INTERESTS

The faculty of the Department of Anatomy are actively engaged in research on several fundamental aspects of cell biology including developmental biology. Projects on spinal cord regeneration, neuronal transplantation, innervation of cerebral blood vessels and circulation of the cerebrospinal fluid are representative of departmental interests in neurobiology. Studies of muscle biology focus upon atrophy, hypertrophy, growth, regeneration and trophic influences of nerves on skeletal muscle. An extensive research program in reproductive biology is focused on the regulation of ovarian function.

UNDERGRADUATE MEDICAL PROGRAM

First Year

MANA 511. Anatomy of the Human Body. A comprehensive understanding of the morphological organization of the human body is provided. The basic concepts of structure as related to function are described in lectures and demonstra-

tions. Laboratory facilities are provided for dissection of the human body and for the study of osteology and prosected material. The course includes instruction in living anatomy, roentgen anatomy and clinical correlation. (Dr. Rees and Staff)

MANA 512. Histology and Cell Biology. Students will acquire a basic knowledge and understanding of the light microscopic structure of the human body, and its fine structure as observed with the electron microscope. The interdependence between structure and function in the different tissues and organs of the body is emphasized. Clinical and research applications of the course material are also stressed. Histological slides are provided for laboratory study and special lectures are given on functional ultrastructure. (Dr. Strum and Staff)

MANA 513. Neurological Sciences. This course provides an integrated study of neuroanatomy, neurophysiology, neurochemistry and an introduction to clinical neurology. The structure and function of the central nervous system are presented simultaneously. Facilities are provided for dissection of the human brain, examination of stained microscopic sections of the neuraxis and laboratory experience involving the study of functional aspects of the nervous system. (Dr. Rennels and Staff)

MANA 514. Human Embryology. This series of one-hour lectures surveys the fundamentals of development of the various organ systems from conception to birth. (Dr. Hirshfield and Staff)

ELECTIVES

Special electives are available to clinical and preclinical students. Some are listed in the Graduate School and medical school elective catalogs, and others can be offered by direct arrangement between student and faculty.

Anesthesiology

Department of Anesthesiology
Martin Helrich Professor and Chairman
M. Jane Matjasko, MD

As part of the sophomore course given by the Department of Pharmacology and Experimental Therapeutics, a discussion group elective "Clinical Practice in Anesthesiology" is offered to present the core curriculum of the specialty. The course is highlighted by "hands on" laboratory animal demonstrations in the Anesthesiology Research Laboratories.

In addition, during the first two years the department participates in lectures, conferences and laboratory exercises of various preclinical departments. Such participation is intended to illustrate the application of basic science principles to the clinical practice of anesthesiology. Emphasis is placed on the physiologic and pharmacologic basis for the management of patients before, during and after surgery.

Electives of varying orientation and complexity are provided during the clinical years. These include clinical anesthesiology, neuroanesthesia and critical care medicine. Further information and details concerning the elective courses may be found in the electives catalog or by contacting the department chairman.

RESEARCH INTERESTS

Research is related to cardiorespiratory function and computer models. Studies under way include:

- Five-year NIH funded study to investigate the effects of anesthesia, posture and surgery on the chest wall.
- A U.S. Army funded study to investigate novel forms of field ventilation including continuous flow and tracheal insufflation of O_2 .
- A U.S. Navy funded project to examine performance of anesthesiologists in the resuscitation area and operating rooms of the Shock Trauma Center.
- An industry funded project to examine new O_2 carrying solutions as blood substitutes in hemorrhagic shock.

All the above studies involve measurement of physiologic data online. Computer interfacing and analysis play an important role.

Other projects include examination of acinar gas mixing using radioisotope analysis of xenon washout. An automated anesthesia record has been developed and is in the process of implementation. Anesthesiology faculty members also work in the Department of Pharmacology with interest in GABA receptors and mechanisms of anesthetic action. In addition, collaborative projects are underway with other investigators in pharmacology, physiology and biological chemistry.

Ten faculty members and two resident anesthesiologists are actively participating in laboratory studies. Up to three medical students can be accommodated during the summer with experience provided in instrumentation and anesthesia for laboratory animals utilizing many of the interventions and measurements of cardiorespiratory function used in clinical practice. The students would join ongoing research projects and assist with data collection and analysis.

Biochemistry

Department of Biological Chemistry
Professor and Chairman
Giuseppi Inesi, MD, PhD

Biochemistry, including molecular biology, seeks to understand the phenomena of biology in terms of molecular structure and interaction. It permeates all of modern biology and medicine and is a fundamental prerequisite to other medical sciences, particularly pharmacology, microbiology, cell biology and pathology; and the clinical sciences.

It is a teaching goal of the department to present a concise but comprehensive lecture-conference course including as major subjects: proteins, enzymes, nucleic acids, intermediary metabolism, energy production and utilization, chemical aspects of hormones, protein and nucleic acid biosynthesis, an introduction to molecular biology and biochemical genetics. In addition, the introductory biochemistry course includes a systematic series of correlative medicine sessions organized with the Department of Medicine that demonstrates the application of biochemistry to the understanding of human disorders. The department also offers an Independent Study Course which covers the same material in a small group setting.

Because some entering students have had previous exposure to biochemistry and molecular biology, the department offers a place-out examination during the first week of the freshman year.

Students with special interests in biochemical investigation are encouraged to contact individual faculty members about opportunities for part-time or summer research. Limited funds have been available to support part-time research assistants from the medical school.

The department also offers a doctoral program, an MD/PhD program, and a series of advanced courses (see Graduate School catalog).

RESEARCH INTERESTS

Research interests within the Department of Biological Chemistry are numerous and include studies in membrane transport and membrane biochemistry, eukaryotic and prokaryotic molecular biology, virus assembly, enzymology, fluorescence spectroscopy, Ca^{2+} regulation mechanisms, receptor mechanisms, hemoglobin biochemistry as well as many others.

UNDERGRADUATE MEDICAL PROGRAM

First Year

MBIC 600. Biochemistry. This course, presented in the first semester, is oriented toward mammalian biochemistry, metabolism and the fundamentals of

molecular biology. A series of correlative medicine presentations in collaboration with members of the Department of Medicine emphasizes the applications of biochemistry to medical problems. The course presentations include lecture and small group conferences.

Fourth Year

MBIC 548 Research Elective. Students are offered the opportunity to carry out research projects in collaboration with individual faculty members of the department. The faculty of this department are engaged in important research in the principal fields of biochemistry and molecular biology. In addition to the individual research programs of the faculty, the department is widely recognized for the Center of Fluorescence Spectroscopy, under the direction of Dr. Lakowicz, and the NIH Program Project on regulation of Ca^{2+} in muscle, under the direction of Dr. Inesi.

Biophysics

Department of Biophysics
Professor and Acting Chairman
Raymond A. Sjodin, PhD

The Department of Biophysics strives to provide medical students with a background in membrane transport, electrical excitability of nerve and muscle, muscle contraction and the physicochemical principles necessary for the understanding of physiology and the neurosciences. The department also offers a program of graduate study leading to the PhD degree. Study programs are flexible and depend upon the preparation and interest of the student. Arrangements for a combined MD/PhD program are available on an individual basis.

Information regarding requirements, graduate courses offered and research interests of the staff are available from the department, 660 West Redwood Street, Baltimore, Maryland 21201. Deadline for graduate applications is March 1.

UNDERGRADUATE MEDICAL PROGRAM

First Year

MBPH 510. Principles of Biophysics. Given in cooperation with the Department of Physiology, this course is required of medical students. It is comprised of an introduction to cell physiology with special emphasis on osmotic and electrolyte balance in cells, the processes underlying the generation of the membrane potential, the mechanisms involved in electrical excitation of nerve, the trans-

fer of excitation across synapses and the mechanism of muscle contraction. (Staff)

Electives Open to First, Second and Fourth Year Students

MBPH 511. Topics in Membrane Biophysics Elective. This course covers the following: 1) fundamentals of membrane permeability and transport; 2) enzymatic basis for active transport; 3) nerve excitation and conduction (cable properties and biophysical analysis); 4) muscle contraction and excitation-contraction coupling; and 5) selected topics of possible clinical significance. (Dr. Sjodin, Dr. Gonzalez)

MBPH 512. The Application of Computers to Medicine Elective. Students are introduced to the uses of computers in the biosciences and medicine. Each student will have an opportunity to acquire experience using a terminal to interact with a computer. An introduction to the techniques needed to undertake digital simulation of physiological processes, statistical analysis, plotting and FORTRAN programming will be presented. (Dr. Hybl)

Diagnostic Radiology

Department of Diagnostic Radiology
Professor and Acting Chairman
Gerald S. Johnston, MD

Since German physicist Wilhelm Conrad Roentgen discovered the x-ray in 1895, its use has been greatly expanded in our society. With the advances in technique, including computed tomography, radiology now makes or verifies the diagnosis in three out of four cases of organic disease. With the addition and integration of nuclear medicine, ultrasonography and magnetic resonance imaging (MRI), diagnostic imaging is playing an even more extended role in diagnosis and selected (interventional) therapeutic procedures.

RESEARCH INTERESTS

Basic science research in the Department of Radiology focuses upon digital radiography and fluoroscopy sensor development. Departmental researchers are building a high-resolution, scanning solid state x-ray detector for digital radiographic studies, particularly mammography. The department is also working in cooperation with x-ray equipment manufacturers to improve current digital subtraction angiography (DSA) systems. A new area of research being developed is the application of computed vision techniques to radiography imaging. This effort, in collaboration with the internationally renowned Computer Vision

Laboratory at the University of Maryland College Park, will seek to develop quantitative measures to assist the radiologist in evaluating the presence, extent and severity of disease. An active project is ongoing for evaluating pulsed, low-frame rate fluoroscopy for patient exposure reduction.

Clinical research is this department's main focus and includes several long-term projects. Cooperative studies with physicians in gynecologic oncology and the University of Maryland Cancer Center are proceeding to establish the accuracy and limits of computed tomography and MRI in staging gynecologic malignancies and lymphoma. Several projects are under way, in co-operation with MIEMSS physicians, evaluating the usefulness of CT and MRI in the diagnosis of multiple visceral trauma, hemological trauma and skeletal trauma, particularly involving the pelvis and acetabula. Multiple cooperative nuclear-cardiology studies are progressing with cardiology, and used angiography equipment is being installed in the cardiology laboratory in the Medical School Teaching Facility.

UNDERGRADUATE MEDICAL PROGRAM

The Department of Radiology offers the medical student an opportunity to acquire a broad base of knowledge touching on almost all aspects of medicine. Formal instruction is carried out in the third year with the course **RADI 540**. The required curriculum is supplemented with informal case discussions with the staff and contact through interdepartmental rounds and conferences involving radiology while the student is on the other clinical rotations at the University of Maryland Medical System.

Third Year

RADI 540. Basic Radiology. Groups of students are assigned for a period of three weeks to the Department of Radiology. The group is subdivided to allow individual instruction as the student rotates through brief observation periods in selected subspecialties within the department. Students also receive an introduction to the Department of Radiation Oncology. Reading assignments, small group slide-tape exercises, a student teaching file and lectures form the core of the learning experience. Students attend departmental conferences and some joint conferences with other departments. An objective final examination is included in the course.

Third and Fourth Year

Radiology Elective. Students learn more about properly using diagnostic imaging and interpreting images. The precise curriculum is flexible, tailored to the needs of the student's career choice. Students are expected to investigate some small aspect of imaging within their area of interest and make a short presentation to the faculty and residents. This presentation and overall performance, as evaluated by the curriculum supervisor, serve as the evaluation criteria for this elective. **RADI 540** is a prerequisite.

GRADUATE PROGRAM

A four-year residency is offered in radiology at the University of Maryland Medical System. Fellowships are offered in computed body tomography/ultrasonography/MRI, interventional and vascular radiology, neuroradiology, critical care trauma and musculoskeletal radiology.

Epidemiology and Preventive Medicine

Department of Epidemiology and Preventive Medicine

Professor and Chairman

Paul D. Stolley, MD, MPH

Modern epidemiology is a relatively new biomedical discipline at the interface of clinical practice and basic medical science. The clinical arena within which epidemiologists work is termed preventive medicine. The practice of epidemiology and preventive medicine requires a comprehensive knowledge of clinical medicine and basic medical science, as well as research methods, biostatistics and social sciences.

The department is engaged in teaching, research and service across the spectrum of public health and preventive medicine. Programs in clinical epidemiology, biostatistics, environmental and occupational health, health services administration and evaluation, health services research, medical effectiveness research, gerontology, behavioral science, maternal and child health, international health, health economics and medical informatics are offered. Faculty members also conduct research and offer courses, seminars, journal clubs, clinical assignments and supervised research experiences designed to enhance the physician's capabilities in these areas of increasing public concern.

Interdisciplinary programs with the Divisions of Geographic Medicine and Infectious Diseases of the Department of Medicine and the University of Maryland Cancer Center are additional resources available to qualified students. Other facilities include the Survey Research and Development Center, the Health Data Management Center and the Maryland Cancer Registry.

Required courses in biostatistics, epidemiology, occupational and environmental medicine, organization of the health care system and clinical preventive medicine are given in the first, second and fourth years of the curriculum. The Department of Epidemiology and Preventive Medicine may be chosen by MD/PhD students for their work towards the PhD in epidemiology. In addition, many of the graduate courses, tutorials and research experiences available to residents and PhD students are also available to medical students during their elective periods. Students are invited to attend departmental seminars and journal clubs, which are scheduled each week through the academic year.

An approved two-year residency leading to certification in general preventive medicine is designed to prepare physicians for positions in federal health agencies, state health departments, hospitals, medical schools, public health institutes and industry, as well as for the practice of clinical preventive medicine.

The community service activities of the department are carried out through active collaboration in health planning, research and evaluation with agencies and institutions concerned with health problems throughout the region. These include hospital clinics, health departments and a variety of other governmental and voluntary organizations.

RESEARCH INTERESTS

Research activities within the department encompass a broad range of interests. Clinical and community intervention studies directed toward the prevention of heart disease, cancer and stroke are major research areas of the department. Environmental risk factors for congenital heart disease and other birth defects represent another important area of departmental research. A third major concentration for research is the general area of gerontology with special reference to musculoskeletal problems associated with aging and long-term care for persons with dementia.

Hospital and health services research, including studies of medical care effectiveness, are subjects of increasing interest to departmental faculty. Health behavior modification with particular emphasis on smoking cessation has been a continuing research activity over the past two decades.

The department has recently added a program of international health that operates in collaboration with the Naval Medical Research Unit #3 in Cairo investigating the prevention and control of infectious and tropic diseases.

UNDERGRADUATE MEDICAL PROGRAM

First Year

PREV 501. Biostatistics for the Physician. Second Semester. This course is designed to enable the student to evaluate clinical and research findings published in the medical literature. Topics include: probability, probability distributions, descriptive statistics, sampling, hypothesis testing, regression, correlation and survival analysis. (Dr. Hebel and Staff)

Second Year

PREV 500/540/560. Introduction to Preventive Medicine. January Block. This course consists of three components offered concurrently. The three grades are combined into a single grade for the course. The format of the course includes full class lectures and small group discussions. (Dr. Sherwin)

PREV 500. Epidemiology and Clinical Research Methods. The fundamental methods of epidemiological and clinical research are taught in a lecture and dis-

cussion group format, with a continued emphasis on the critical appreciation of the medical literature (introduced in Biostatistics). Each student is required to present one paper and discuss another in a journal club format. (Drs. McCarter, Scott, Sherwin and Staff)

PREV 540. Organizational Aspects of the Health Care System. The use of epidemiologic methods in the analysis of relationships between social and organizational factors on the one hand and health status on the other is emphasized. Structural components of the health care system, alternative modes of health care delivery, utilization of health care services and referral patterns are discussed. (Drs. Hudson, Magaziner and Staff)

PREV 560. Occupational and Environmental Medicine. An introduction to disease in the occupational and environmental setting, including techniques for taking outpatient histories is offered. (Dr. Keogh and Staff)

Fourth Year

Ambulatory and Clinical Preventive Medicine. The clinical preventive medicine component of this course presents the applications of preventive medicine to clinical practice. It emphasizes the important role of the physician in health promotion and disease prevention. Sessions focus on risk factors for the leading causes of death and disability in the United States and on important issues in health care policy affecting physicians and their patients. (Drs. Havas, Sherwin, Scherlis and clinical faculty)

Electives

A variety of elective opportunities are available for medical students. These include tutorials with selected faculty members, supervised research experiences and courses that are offered longitudinally throughout the year or during the minimesters. Among currently offered courses are the following:

HCPR 512. Critical Issues in Health Care (Dr. Hoffmann)

HCPR 515. Topics in Biomedical Ethics (Rev. Whitlock)

HCPR 522. The Geriatric Imperative (Dr. Magaziner)

PREV 516. Birth Defects (Dr. Ferencz)

PREV 517. Women's Health (Dr. Kjerulff)

PREV 530. Applications in Biomedical Computing (Dr. McCarter)

PREV 541. Introduction to Public Health Practice (Dr. Rubin)

PREV 589. Research in Epidemiology and Preventive Medicine (Dr. Rubin)

FELLOWSHIPS AND HONORS PROGRAMS

Summer fellowships and honors programs in preventive medicine are available to a limited number of students. Each student works closely with a faculty member and undertakes a research project in some aspect of preventive medicine or

epidemiology. Fellows also participate in departmental seminars, journal clubs and workshops that enhance opportunities for interaction with other faculty members, residents and students. Elective credit is given to those satisfying the requirements of the program.

The Abraham Lilienfeld Prize is awarded for excellent achievement in the department's courses during the first two years of medical school.

The Robley Dunglison Prize awarded for overall excellence in preventive medicine throughout medical school with special emphasis on Clinical Preventive Medicine in the fourth year.

GRADUATE AND POSTGRADUATE STUDIES

The Department of Epidemiology and Preventive Medicine collaborates in the MD/PhD program of the School of Medicine. Work towards the PhD will normally occupy at least three years between the second and third years of medical school. Stipends are available to support one or two such students.

The department also offers an accredited two-year residency program in general preventive medicine leading to eligibility for certification by the American Board of Preventive Medicine. This provides a variety of opportunities for advanced study and practice in epidemiology, biostatistics, computer science, health care administration, gerontology and occupational health.

Components of the residency program include required and elective graduate-level courses, a variety of seminars, journal clubs and workshops, supervised research experiences and field placements in public health or research settings.

Combined residency programs may be arranged for qualified applicants in cooperation with the Departments of Medicine, Pediatrics, Family Medicine and other clinical departments. These qualify the residents for board-eligibility in both preventive medicine and the clinical specialty.

The department's Graduate Program in Preventive Medicine includes MS and PhD degree programs, in addition to the MD/PhD program.

Family Medicine

Department of Family Medicine
Associate Professor and Acting Chairman
C. Earl Hill, MD

The Department of Family Medicine educates family physicians to render high-quality medical care to individual patients and families in a continuous and comprehensive manner. Family physicians are: responsible for patient care at the point of entry into the health care system; providers or coordinators of health care at the secondary and long-term care phases of illness; and coordinators of tertiary care.

The department offers educational experiences in family medicine for students at the Family Health Center, on the Family Practice Inpatient Service and through an interdisciplinary, longitudinal, educational program that is guided by a staff of experienced family physicians. Moreover, students may participate in community health services and supervised practice experiences, as well as in basic health care research.

Within the discipline of family medicine several areas are emphasized. The department has a Division of Geriatrics that dates back to 1974 and is a national leader in geriatrics education. It was the first specifically dedicated Division of Geriatrics on this campus. Multiple programs, both departmental and interdisciplinary, are in place or being formulated. The Supportive Care Unit is a unique model for rehabilitation of frail, elderly patients following an acute hospital stay, focusing on optimization of function with a goal of returning patients to home, or the least restrictive environment, upon discharge. The broad spectrum of the division's educational, research and patient care efforts includes the pre-elderly well, the hospitalized elderly, the frail homebound elderly, and the chronically incapacitated aged patient. The division provides regular housecalls for 150 frail homebound elderly, the largest program in the city. The Division of Geriatrics is a leader in the field of quality assurance in long-term care facilities. Expansion of facilities and activities to continue eminence in this area is in progress.

Faculty development is a major departmental effort, as well. Courses and workshops in teaching skills are offered to predoctoral and postdoctoral students. Fellowships in geriatric medicine are offered to residency graduates who wish to further develop their skills in the care of geriatric patients.

RESEARCH INTERESTS

The research efforts of the Department of Family Medicine reflect the broad interests of the department's faculty. Current projects, which are clinically oriented and relate to current medical problems, range from epidemiologic studies to evaluations of specific therapies. The department has a strong interest in health promotion and nutrition, especially as it relates to the family and the elderly. Collaborative efforts with other departments involve investigations into health promotion, infections in the elderly, abdominal pain, informed consent, and osteoarthritis. During their last year of training, all Family Medicine residents are required to complete a research project and to present their results at the Annual Family Medicine Residents' Research Day. The department faculty, fellows and residents present their research at national meetings, and in journals, books and other publications.

UNDERGRADUATE MEDICAL PROGRAM

Longitudinal Elective. Introduced into the curriculum in 1976, this elective permits students with an interest in family medicine to gain knowledge toward that

career objective. The entire elective spans a two-year period and is a survey of topics related to family medicine. The curriculum makes every attempt to correlate basic science and clinical science information. The small group format allows maximum instructor-student, as well as student-student, interaction.

Minimester Electives. During the summer months, students may elect to spend time in the office of a selected family physician in order to observe the varied professional activities of a physician practicing in the community. During preceptorship experiences, students may participate in direct patient care or primary health care research.

Family Care Track Program. The Family Care Track (FCT) is an elective undergraduate experience designed to teach medical students the principles of family medicine with a focus on the urban, poor, multi-problem family. It provides a continuous clinical experience through all four undergraduate years. Students are assigned to follow three families over four years in the department's Family Practice Centers. The families are selected to provide exposure to obstetric, pediatric and geriatric care, and to family dysfunction. Supervision is provided to the individual and through the use of small group integration seminars for case discussion. The students are also required to complete a community medicine seminar series, a social services preceptorship, a needs assessment, a community project, and a four-week clinical preceptorship in sites, including some located in health professional shortage areas.

Up to 20 students are selected each year from the freshman Longitudinal Elective in Family Medicine to participate in the Family Care Track Program. Credits for this elective include: 1) one basic science and one nonbasic science credit for each year of the longitudinal elective; 2) four weeks of senior elective credit at the completion of the program; and 3) introduction to clinical practice credit.

Senior Elective in Family Practice. In this elective students work with a community family physician preceptor. They have the opportunity, under supervision, to manage problems typical of a busy practice, ranging from obstetrics to geriatrics. Here, there is ample opportunity to be involved in coordinating continuous care of patients for four to six weeks. Students begin to understand the patient in relationship to family, job and environment. Furthermore, the student observes the role of the physician in society, the social and civic obligations and responsibilities to the patient. Site options range from urban health manpower shortage sites to rural private practice. In these varied settings students are expected to conduct a limited clinical investigation, using data collected in the practice, and to attend weekly Alcoholics Anonymous or Al-Anon meetings in the community.

Senior Internship in Family Practice. The Department of Family Medicine offers an eight-week internship to senior students. This is an extensive inpatient experience utilizing the family medicine inpatient service. Variety is a major

attraction as the patients' needs range from newborn care and obstetrics to adult general medical and geriatric care. The student is exposed to the family practice approach to inpatient care with an emphasis on interdisciplinary, comprehensive and continuous care. The students participate in night and weekend call. Students may opt to accomplish the rotation at University Hospital or Union Memorial Hospital. The rotation at Union Memorial is primarily an internal medicine experience.

Senior Ambulatory Clerkship in Family Practice. Students may select the Family Health Center as an option in the required Senior Ambulatory Course. This eight-week rotation exposes students to the clinical practice of the Department of Family Medicine Residency Program. In this setting students are scheduled to see patients daily in the Family Health Center, work with a variety of preceptors from the Department of Family Medicine, and participate in didactic sessions. This ambulatory experience is designed to expose students to the principles and practice of Family Medicine.

GRADUATE MEDICAL PROGRAM

The University of Maryland's approved three-year residency in family practice is one of the oldest in the nation. Approximately 36 residents are enrolled in a three-year program whose goal is to provide comprehensive training in the specialty, utilizing the latest information and educational methods. Resident training takes place both at University Hospital, where the expertise of faculty in all specialties can be utilized, and in several community hospitals where the residents are exposed to a wide variety of patient problems. The program adheres closely to the educational requirements of the Residency Review Committee for Family Practice of the Accreditation Council for Graduate Medical Education. Additionally, every effort is made to see that the curriculum and educational experiences are in accordance with the Residency Assistance Program's Criteria for Excellence in Training. Flexibility, however, is maintained through the availability of electives in order to accommodate the specific needs of the trainee. Although the majority of graduates are actively engaged in family practice in rural, suburban and urban areas, a significant number are pursuing an academic career.

CONTINUING EDUCATION PROGRAMS

This phase of the Maryland program is based on the philosophy that the education of the family physician must be a continuum throughout the entire professional career. These programs help to prepare family physicians to successfully pass each recertification examination as required by the American Board of Family Practice.

A variety of continuing education programs is offered, ranging from short didactic courses to extensive in-depth courses in system-oriented clinical

subjects. Also offered are individually tailored courses designed to fulfill the specific needs of a physician. Information on current and projected courses is available at all times from the Department of Family Medicine or the Program of Continuing Education of the Medical School.

Medicine

Department of Medicine
Theodore E. Woodward Professor and Chairman
John A. Kastor, MD

Professor and Vice-Chairman
Frank M. Calia, MD

Professor and Associate Chairman
Philip A. Mackowiak, MD

The Department of Medicine, or Internal Medicine as it is called in some schools, teaches that body of medical knowledge that enables one to diagnose and treat the illnesses of adults primarily with medicines rather than with operations.

The practitioner of internal medicine is usually called an internist, but he or she may be referred to by the title physician, in the specialized use of the word, which can also be applied to any medical doctor. An internist, used in this sense, may be a cardiologist, an endocrinologist, a gastroenterologist, a rheumatologist or a practitioner in one of the dozen or so specialties of internal medicine. But the internist always remains the physician (or the diagnostician as internists were called in past decades) whose special competence is solving difficult diagnostic problems and personally applying, or obtaining from a colleague, the best treatment available at the time.

The term internal medicine, which derives from the German *Innere Medizin*, was first used during the nineteenth century when many American physicians travelled to Germany and Austria for training in what were then the leading clinics and medical laboratories. According to one medical historian, "Within a decade or so after 1880, internal medicine was differentiated from ordinary clinical medicine, the simple natural history of disease, by emphasizing that it was based on experimental work in physiology and physiochemistry." Internists have always required special training to acquire their knowledge and skills and have continuously shown a particular interest in the scientific basis of clinical work.

Educating medical practitioners for the state and the nation is the principal training responsibility of the faculty of the Department of Medicine, but it is also our aim to develop in some students a desire to make useful discoveries

through basic or applied research. Fundamental advances in the causes and treatment of disease have often been made by internists; for example, the work on cholesterol metabolism which in 1985 brought the Nobel Prize in Medicine and Physiology to two internists, one a gastroenterologist and the other a geneticist. In keeping with this traditional devotion to the value of research, the Department of Medicine provides many opportunities for students to participate in research and strongly encourages all who may have an interest to experience the work of the investigator in one of our laboratories.

UNDERGRADUATE COURSES

Second Year

PDIA 520. History and Physical Examination. Eliciting an accurate story of the patient's complaints (the history) and detecting abnormal findings by physical examination constitute the fundamental skills of every physician. To acquire these abilities, students attend introductory lectures from members of the faculty; afterwards, groups of two students meet weekly with instructors in one of the University of Maryland's teaching hospitals. The students interview and examine patients with a wide variety of illnesses and then discuss the findings with their teacher who correlates the observations with pathophysiological abnormalities being studied in basic science courses.

Third Year

MEDC 530. Clinical Clerkship. This is the fundamental course in internal medicine for medical students. For 12 weeks, the students work with the medical teams caring for inpatients at the department's three primary teaching hospitals: the University of Maryland Hospital, the Baltimore Veterans Administration Medical Center and Mercy Medical Center. Students join the interns, residents, and nurses for work rounds at 8:00 a.m. and participate in the daily conference with their attending physician from the faculty at 9:00 a.m. Monday through Friday. At 11:00 a.m. clinical clerks attend a student lecture delivered by members of the faculty designed to teach the most important subjects in internal medicine during the 12-week course. At noon on Wednesdays and Fridays, students join the house officers and faculty at Medical Grand Rounds and the Morbidity and Mortality Conference. During the afternoons and evenings, clerks examine patients and evaluate laboratory data to develop diagnosis and treatment programs with the house officers and faculty.

Fourth Year

MEDC 548. Student Internship (Subinternship in Medicine). Each fourth-year student takes a subinternship in medicine, pediatrics, surgery or family practice. The student internship in internal medicine occupies eight weeks, four of which must be spent on the general medical services at the University of Maryland Medical System or the Baltimore Veterans Administration Medical Center. During the other four weeks, students may work at either of these hospitals

or in the University of Maryland Cancer Center, the Coronary Care Unit or the Medical Intensive Care Unit of the University of Maryland Hospital, Mercy Medical Center or at one of the other hospitals affiliated with the University of Maryland Medical System. Student interns work as if they were graduate physicians but under the close supervision of the resident and attending physicians. Subinterns are on-call in the hospital with their resident physicians one out of four nights. The amount of responsibility delegated to subinterns depends upon the extent of each student's knowledge, dedication and maturity. Successful completion of a subinternship in medicine prepares students particularly well for internships in any subject.

Laboratory and Clinical Research Electives. The faculty of the Department of Medicine strongly encourages all students to join them on a full-time or part-time basis to participate in research projects being conducted in the department. This experience may be scheduled at most times of the year. Students with an interest in investigation should talk with members of the faculty or the chairman about the many opportunities for this work available in the Department of Medicine.

GRADUATE PROGRAM

House Officer Training. The Department of Medicine appoints each year approximately 35 leading members from the fourth-year class of the University of Maryland School of Medicine and other medical schools to its internship at the University of Maryland Hospital and the Baltimore Veterans Administration Medical Center. About 28 of the interns remain to become junior and senior residents. At the completion of three years of postgraduate training, house officers become eligible for certification as diplomates of the American Board of Internal Medicine. About seven of the interns leave the program after one year for residency training in specialties such as anesthesiology, dermatology, neurology, ophthalmology and radiology.

Interns and residents care for all the inpatients on the medical services at the University of Maryland's principal teaching hospitals under the guidance of the department's faculty. Throughout their training they also follow the medical progress of a group of patients in the outpatient department.

CONTINUING MEDICAL EDUCATION

The department and its specialty divisions sponsor several courses each year to inform graduate physicians about the most recent developments in the profession. Physicians also are invited to attend the regular clinical and research conferences held by the specialty divisions and the weekly Medical Grand Rounds held on Wednesdays from 12:15 p.m. to 1:15 p.m.

CARDIOLOGY

Division of Cardiology

Herbert Berger Professor of Medicine and Head

Robert A. Vogel, MD

UNDERGRADUATE COURSES

Fourth Year

CARD 541-01. Clinical Cardiology Elective, University of Maryland Hospital. Students participate in patient evaluation and examination under the close supervision of faculty members. Basic concepts of physical examination are stressed and correlated with both noninvasive and invasive techniques. The rotation includes an opportunity for adult and pediatric cardiology training in the clinics, coronary care unit and graphics laboratory with emphasis on complete patient evaluation, as well as the development of individual areas of interest.

CARD 541-07. Cardiology Elective, Baltimore Veterans Administration Medical Center. Students spend one month participating fully in all activities of the clinical cardiology service. Experiences include medical and surgical consultations, cardiology clinic, daily readings of electrocardiograms and echocardiograms. Special student-oriented conferences on clinical and research topics in cardiology are regularly held.

POSTGRADUATE FELLOWSHIPS

Selected applicants participate in the activities of the division including responsibilities for cardiac catheterization, electrocardiographic interpretation, echocardiography and exercise testing. The fellowships begin July 1 of each year and financial stipends are provided. Application is made through the head of the division and should be completed by November of the preceding year.

DERMATOLOGY

Division of Dermatology

Professor and Head

Joseph W. Burnett, MD

UNDERGRADUATE MEDICAL PROGRAM

Fourth Year

DERM 530. Introduction to Dermatology. Students are assigned reading on the more common skin eruptions. Eight two-hour sessions are held for each clinical rotation. Individual instruction is given by one of the senior staff members

emphasizing the pertinent aspects of differential diagnosis. The relationship of cutaneous lesions to internal disease is stressed.

DERM 541. Dermatology Elective. Dermatology may be taken as an elective during the fourth year. Students will work together with the dermatology residents in the diagnosis and treatment of patients with skin eruptions. They will actively participate in grand rounds, daily seminars and the weekly journal club. They will also attend the clinical sessions of the Maryland Dermatological Society.

GRADUATE PROGRAM

Instruction is given in dermal pathology, microbiology, pharmacology, venereology, immunology and clinical dermatology. Trainees are required to attend local and regional dermatology society meetings. Attendance is also required at the annual meeting of the American Academy of Dermatology. The department helps to defray the expense of attending this meeting.

Trainees are encouraged to study research methods and to actively participate in studies. Part of the training period is spent at the Veterans Administration Medical Center and Mercy Hospital as well as at the University of Maryland Medical System.

ENDOCRINOLOGY

Division of Endocrinology
Professor and Head
John F. Wilber, MD

UNDERGRADUATE COURSES

Second Year

PATH 520. In the second semester an intensive two-week course is given in collaboration with the departments of pathology, pharmacology, pediatrics and ob/gyn. The course emphasizes the pathophysiologic basis for clinical disturbances of endocrine function.

Summer fellowships of eight to 10 weeks are also offered. These emphasize clinical or basic research training, including molecular biology.

Fourth Year

ENDO 541. Clinical Endocrinology and Metabolism Elective. Seniors are provided a broad clinical experience through a four-week concentrated period of training devoted mainly to a study of patients with clinical disorders of endocrine function. Students are involved in the day-to-day management of both hospitalized and outpatients and participate in weekly clinics under the direct supervision of staff members. The pathophysiologic basis for diagnostic and management aspects is presented at daily rounds and at weekly in-depth con-

ferences, Grand Rounds and journal club. A separate elective of 12 weeks is also available to interested students who may desire a longer period of training and/or wish to pursue a clinical or laboratory research project.

Affiliated Hospital Electives. Electives in endocrinology are available at York (Pa.) Hospital and the Baltimore Veterans Administration Medical Center.

POSTGRADUATE FELLOWSHIPS

Full-time positions are available to selected candidates who have usually completed two or more years of house officer training. Fellows all conduct independent clinical or basic research programs with graduated autonomy. Broad clinical inpatient and outpatient activities are designed for subspecialty board preparation. Academically oriented fellows are sent to the Endocrine Society Research Training program during year 1. Applications and interviews are required and competitive stipends are offered.

GASTROENTEROLOGY

Division of Gastroenterology
Professor and Head
Stephen P. James, MD

UNDERGRADUATE COURSES

First and Second Year

Minimester in Liver Disease. Twenty-four hours devoted to selected topics and current pathophysiology and treatment concepts in clinical liver disease. Twelve topics, including jaundice, ascites, hepatic coma and portal hypertension are treated in depth.

Fourth Year

GAST 544-01. Clinical Elective. A broad clinical experience in consultations, literature review and conferences on GI and liver problems. Students evaluate consultations with GI fellows and senior staff; plan diagnosis and management; and follow patients through definitive treatment and discharge. The rotation includes attendance at four hours of conference, 10 hours of GI clinical rounds and four hours of clinic experience weekly.

Summers Research Electives. GI, liver and nutrition electives are available and may carry a stipend. Individually arranged.

GENERAL INTERNAL MEDICINE AND GERIATRICS

Division of General Internal Medicine and Geriatrics

Professor and Head

Mohamed S. Al-Ibrahim, MB, ChB

Our concept of the general internist at this institution is that of an individual who is: 1) skilled in all facets of health care, both acute and chronic, as well as the ambulatory and inpatient level; 2) an educator of peers, students and the public; 3) interested in the impact of health care delivery and its evaluation; 4) an able administrator capable of management decision making and planning; 5) an active participant in the affairs of the community. In addition, the Division of General Internal Medicine and Geriatrics provides education, clinical training and research experience in geriatrics for medical students and graduate trainees to the fellowship level.

The goal of the General Internal Medicine and Geriatrics Program is to prepare physicians, beginning with inpatient, ambulatory and elective experiences during the students' clinical years that continues with an extensive graduate medical education program. The division delivers a wide range of primary and consultative health care services for ambulatory and hospitalized patients at University clinical sites that are also used for student and resident medical training.

RESEARCH INTERESTS

The research interests within the division are broad and include: biomedical and clinical investigation of the aging process and the effects of obesity, exercise, nutrition, hypertension, lipid and glucose metabolism on cardiovascular disease in the elderly; evaluation of preventive and rehabilitative care strategies; curriculum development and evaluation in ambulatory education; and institution and evaluation of health care practices on elderly patients.

UNDERGRADUATE COURSES

Selected ambulatory primary care elective experiences are offered as part of the senior ambulatory rotation in internal medicine and there are clinical and research electives in gerontology and medical consultation. For further information, consult the medicine section of the electives catalog. These experiences are offered on the UMAB campus and at affiliated medical institutions.

GRADUATE PROGRAM

The graduate medical education program in internal medicine educates and trains physicians in the principles and practices of general internal medicine. Our graduates have been successfully evaluated against the most stringent national standards of medical practice and quality of patient care. Our intent is to prepare

clinicians by providing training via a broad internal medicine curriculum. Specialized training experiences are encouraged and are presently available in geriatrics, risk assessment, preventive care and rehabilitation medical care as well as and health services research. Students and residents are supervised by a team of clinician educators, practitioners and scientists in the program. The faculty include general internists and geriatricians, psychiatrists, epidemiologists, clinical pharmacists, primary care nurse clinicians and social workers.

The General Internal Medicine Program meets the requirement for certification by the American Board of Internal Medicine, and provides extensive medical background and experiences in education with training experiences in clinical practice, research, teaching, management, planning and evaluation of health care.

GEOGRAPHIC MEDICINE

Division of Geographic Medicine
Professor and Head
Myron M. Levine, MD, DTPH

GRADUATE PROGRAM

Postgraduate fellowships in Geographic Medicine are offered in conjunction with the Division of Infectious Diseases. Fellows spend their first year doing clinical rotations on the infectious diseases consultation services at the University of Maryland Medical System, the Baltimore Veterans Administration Medical Center, the Maryland Institute for Emergency Medical Services Systems and the University of Maryland Cancer Center. The second year is spent in clinical or laboratory research under the supervision of faculty members in the division.

Research may be conducted in the laboratories of the division in Baltimore or in one of the division's field areas in Chile, Peru or Venezuela. The division is closely tied to the Center for Vaccine Development. Laboratories are fully equipped for work in molecular genetics, immunology, antigen purification, routine and enteric microbiology, parasitology (including animal studies) and antimicrobial sensitivity testing. Faculty research interests include the pathogenesis and epidemiology of enteric organisms such as *Vibrio cholerae* and other vibrios, *E. coli* *Salmonella*, *Shigella*, *Yersinia*, *rotavirus*, *Giardia* and *Cryptosporidium*. Much of the research effort is directed towards developing vaccines against these enteric pathogens as well as vaccine testing against malaria and AIDS. The division maintains a close relationship with the Department of Epidemiology and Preventive Medicine where fellows may take courses in epidemiology and biostatistics during their training. Application for fellowships is made to Dr. J. Glenn Morris, Fellowship Program Director.

HEMATOLOGY

Division of Hematology
Professor and Head
Charles A. Schiffer, MD

UNDERGRADUATE COURSES

Fourth Year

HEMA 541-01. Clinical Elective. Broad clinical experience in both malignant and nonmalignant hematologic disorders is available. Students perform hematology consultations with fellows and senior staff and have the opportunity to attend multiple clinical and laboratory conferences within both the division and the University of Maryland Cancer Center. Extensive experience in bone marrow aspiration, biopsy and interpretation is provided. Rotations are for a minimum of four weeks.

Research Electives. Summer research electives in various aspects of hematologic malignancies are available. Opportunities are available to work in the Cell Component Therapy Section of the University of Maryland Cancer Center (a specialized transfusion service), an active cytogenetics laboratory, an immunology laboratory studying antigenic characteristics of malignant cells, as well as the acquired immune deficiency syndrome (AIDS), electron microscopy laboratory and laboratories engaged in the study of leukemic cell differentiation and cellular pharmacology. Stipends may be available.

HYPERTENSION

Division of Hypertension
Associate Professor and Head
Elijah Saunders, MD

UNDERGRADUATE COURSES

First and Second Year

Selective lectures are given on hypertension as a part of the physiology, pharmacology, pathology and preventive medicine courses.

Fourth Year

Electives are available for fourth-year students. Students electing this course will be exposed to and participate in the entire program of the Hypertension Division. This includes experience and supervision in the diagnosis and treatment of hypertensive patients, on both an inpatient and outpatient basis. Daily rounds by senior members of the Hypertension Division will include students electing this rotation. Students will attend the Hypertension Clinic and also participate

in the care of private patients in a very busy office devoted to the care of difficult hypertension problems. Students will participate in ongoing clinical research programs when appropriate. Students also will attend the weekly hypertension-cardiology clinical rounds held jointly with the Cardiology Division, the bi-weekly Hypertension Center research rounds and the bi-weekly Hypertension Journal Club.

Summer

Summer fellowships in hypertension are available to second-year students who have taken physical diagnosis. Participation in clinical drug trials will be offered.

GRADUATE PROGRAM

Electives for a minimum of one month are available for house officers in training at the University of Maryland Hospital as well as other hospitals in the region. Electives are encouraged for residents interested in cardiology, nephrology or endocrinology as well as a career in internal medicine with emphasis on hypertension. Graduate physicians electing this rotation will gain considerable experience in the evaluation and treatment of difficult hypertension problems and will be instructed in the numerous modalities in treating the hypertensive patient. Interrelationships with many other disciplines at the University of Maryland at Baltimore, both clinical and nonclinical are an ongoing activity of the Hypertension Division through its major role in the University of Maryland Hypertension Center. Trainees will have an opportunity to work with hypertension specialists from the Johns Hopkins University School of Medicine and School of Hygiene and Public Health, the state Department of Health and Mental Hygiene, the Hypertension Commission of Maryland, the American Heart Association and other disciplines in the community which have an interest in hypertension.

Although the Hypertension Division does not currently have a fellowship program, training opportunities for fellows from other divisions can be arranged.

INFECTIOUS DISEASES

Division of Infectious Diseases
Professor and Head
John W. Warren, MD

UNDERGRADUATE COURSES

Fourth Year

INFE 541-01. Infectious Diseases Elective. The discipline of infectious diseases is uncommon in internal medicine in that it is not restricted to one organ system. Indeed the types of patients seen by the Infectious Diseases Consultative

Service are patients in virtually all departments of the hospital. These patients are often among the most acutely ill patients and/or the most difficult diagnostic enigmas within the hospital. These presentations are more than an academic challenge; many infectious diseases can be cured and the patient restored to previous health.

The diagnosis of infections and proper management of patients with these diseases are taught by exposure of the student to practical, clinical, laboratory and research problems. The student will see consultations under the supervision of a full-time attending. A clinical infectious disease conference for faculty, house staff and students takes place each week. Specialized programs are available in AIDS, pediatrics, the Maryland Institute for Emergency Medical Services Systems and the University of Maryland Cancer Center.

POSTGRADUATE FELLOWSHIPS

The postgraduate fellowship is a combined program offered by the Divisions of Infectious Diseases and Geographic Medicine. The first year is clinically oriented and is spent consulting on patients with problems related to infectious diseases. This experience is obtained through rotations at the University of Maryland Hospital, the Veterans Administration Medical Center, the Maryland Institute for Emergency Medical Services Systems and the University of Maryland Cancer Center. Fellows see consults; supervise residents, interns and medical students; and spend much of their time teaching and providing patient care. The second and subsequent years of the program are oriented towards research.

Research interests in the division include pathogenesis of bacterial infections, research physiology of acute inflammation, infections in cancer patients or severely traumatized patients, nosocomial infections and mechanisms of action and pharmacokinetics of antibiotics. Application is made through the division head.

NEPHROLOGY

Division of Nephrology
Associate Professor and Head
John H. Sadler, MD

UNDERGRADUATE COURSES

Second Year

MEDC 525. Human Renal Physiology. This one-month minimester course allows full-time concentration on renal and body fluid physiology with the students using themselves as laboratory subjects. Studies of renal function under different circumstances, mechanisms of water conservation, sodium balance and acid-base balance will be studied. Laboratory sessions are held daily. Appropriate case presentations will illustrate disturbances of physiology. This class is lim-

ited to 16 students and offers an opportunity for prolonged and close contact with Division of Nephrology faculty as well as experience in laboratory measurements and observations of renal function through personal in vivo testing.

Fourth Year

NEPH 541-01. Clinical Nephrology Elective. Students who have completed their required junior electives in medicine, surgery, pediatrics and obstetrics may elect a clinical rotation in nephrology. One-month to three-month electives will be accepted. The student is expected to become thoroughly familiar with the approach to patients with kidney diseases and acquainted with clinical procedures. Each student will present at one nephrology conference. The typical rotation involves the student in seeing consultations with fellows and attending nephrologists, rounds on inpatients, Renal Clinic activities and exposure to the dialysis program. Students with special interest in particular aspects of kidney function or kidney disease may be permitted to pursue those after consultation with the division head.

NEPH 541-03. Nephrology Student Fellowship Elective, Maryland General Hospital. Students are exposed to the practice of clinical nephrology and to the management of acute and chronic renal failure.

POSTGRADUATE FELLOWSHIPS

Qualified physicians may apply for full-time fellowships in nephrology. Although a one-year clinical fellowship may be specially arranged, the standard fellowship is for two years of training. The first year is structured to produce broad experience in clinical nephrology, its procedures and its literature. Basic experience in the research lab is provided. The second year is largely elective, permitting fellows to pursue their chosen direction with planning and supervision. Additional years of experience for those undertaking special projects are available. Fellows completing this program are qualified and prepared to be certified in nephrology. The renal fellowship provides full clinical responsibility for numerous complex problems in renal pathophysiology, in the management of dialysis patients and the care of patients undergoing kidney transplantation. Fellows also become proficient in renal biopsy techniques, peritoneal and hemodialysis. The laboratory offers experience in studies of renal metabolism/function interrelationships and immunologic studies of kidney disease. The fellow is given significant responsibility in teaching third- and fourth-year students and in the supervision of residents on the consulting service.

ONCOLOGY

Division of Oncology
Professor and Head
Joseph Aisner, MD

Fourth Year

MEDC 549-01. Medical Oncology/Hematology Electives. Three different electives are available through the divisions of Hematology and Medical Oncology. Students may choose a subinternship on the inpatient service of the University of Maryland Cancer Center. This provides students and postgraduate physicians with in-depth studies of the diagnosis, natural history and treatment of human cancers. In particular patients with neoplastic diseases are treated according to treatment programs illustrating the opportunities for treatment and support, both physically and emotionally, of the patients with cancer.

Clerkships in oncology provide close interactions with fellows and oncology attendings for a one-on-one experience. The wide diversity of internal medicine diseases seen during the natural history of many cancers makes this an intense course in the treatment of many internal medicine problems common to adult patients. Clerkships on the medical oncology consultation service provide the interaction with other specialties in the management of as yet undiagnosed patients as well as the early detection, diagnosis and staging of malignancy. Clerkships in hematology provide exposure to benign hematologic problems. Individuals on all clerkships are expected to attend the large number of conferences available on a weekly basis that provide didactic information about natural history, new treatments and evolutionary changes in the laboratory understanding of neoplasia.

PULMONARY AND CRITICAL CARE MEDICINE

Division of Pulmonary and Critical Care Medicine

Professor and Head

Lewis J. Rubin, MD

UNDERGRADUATE COURSES

First Year

MPHY 501. Members of the division take part in teaching the physiology course with emphasis on the clinical application to basic respiratory physiology. This includes an introduction to clinical medicine and the sessions in the course on correlative medicine.

Second Year

PATH 520. In the systemic pathology course, two weeks are devoted to the respiratory system. The teaching of clinical medicine is integrated with epidemiology, pharmacology and microbiology and is closely correlated with the teaching of physiology and pathology. This is not a course in respiratory diseases, but the most common and important groups of diseases are included.

Fourth Year

PULM 541-01. Pulmonary Diseases Elective. Fourth-year students participate in all of the activities of the division under the supervision of fellows and faculty. They see patients in the wards, in consultations and in the outpatient clinic. The students learn to interpret tests of pulmonary function and attend all of the conferences in which fellows and faculty participate. The emphasis is on the correlation of clinical features with pathophysiologic and roentgenographic features.

PULM 541-05. Medical Intensive Care Elective, University of Maryland Hospital. The goal of this course is to provide students with clinical experience in managing patients seen in a medical intensive care unit. Students will function at the intern level as primary physicians and will work with the resident in charge, as well as the attending physician. Students will receive a sound background in circulatory and respiratory physiology. They will be exposed to various invasive techniques, including arterial line insertions, Swan-Ganz catheterizations and chest tube placements. In addition there will be exposure to the use of mechanical ventilation in the critically ill patient.

POSTGRADUATE FELLOWSHIPS

Stipends are available for the support of nine fellows at the current University of Maryland Medical System postgraduate scale. Three years of training in internal medicine are required. The goal of the program is to train physicians who are competent in the subspecialties of pulmonary and critical care medicine, and in basic or clinical investigation.

RHEUMATOLOGY

Division of Rheumatology
Professor and Head
Barry S. Handwerger, MD

UNDERGRADUATE COURSES

First Year

Members of the Rheumatology Division participate in teaching the immunology section of the microbiology course and in the pathology and biochemistry courses.

Third Year

During their rotation on medicine at UMMS or the VA Medical Center, junior medical students interact with rheumatology faculty and fellows on the rheumatology consult service. A weekly Rheumatology Grand Rounds and weekly joint conference are open to students.

Fourth-Year Students and House Officers

The Rheumatology Division offers a clinical elective for senior medical students and medical house officers designed to present the spectrum of rheumatic disease and approaches to diagnosis and management. Integration of clinical features with the mechanisms of disease processes is accomplished through informal tutorial sessions as well as didactic lectures. The rationale for the various management programs including drug therapies, physical medicine and orthopaedic surgery is emphasized. Experience is gained in performance of diagnostic procedures (e.g., arthrocentesis) and in interpretation of relevant laboratory data.

POSTGRADUATE FELLOWSHIPS

The Division of Rheumatology and Clinical Immunology offers a two-year clinical fellowship and a three-year fellowship that emphasize training in both the clinical and research aspects of rheumatology. The purpose of the three-year fellowship is to produce MD scientists who are well trained clinically and scientifically and who are dedicated to an academic, research-oriented career. Three years of prior training in internal medicine are required.

Microbiology

Department of Microbiology and Immunology
Professor and Chairman
Jan Cerny, MD, PhD

Training in microbiology and immunology within the medical school curriculum occurs primarily during the sophomore year when all students are required to take medical microbiology and immunology. Emphasis is placed on medical aspects of microbiology and immunology. In addition, elective courses specifically designed for medical students and selected Graduate School courses are available to medical students in all years. Individual faculty members are available to provide instruction and guidance throughout the medical curriculum.

The department also offers the PhD degree. Although the MS degree may be offered in special instances, priority will be given to PhD aspirants. This department encourages students to enroll in the MD/PhD program.

RESEARCH INTERESTS

The research programs within the Department of Microbiology and Immunology are oriented towards the biology of infectious diseases and the host defense mechanisms. Specific projects include studies on latent virus infections, particularly the human immunodeficiency virus (HIV) and AIDS, and the pathogen-

esis of vector-borne agents of malaria, lyme disease and rickettsial infections. These studies are focused on the molecular characterization of antigens and other pathogenic factors, and on the parasite-host interactions at the cellular and organismal level. The projects in basic immunology include molecular analysis of antibody responses and T cell responses, mechanisms of lymphocyte activation, and studies on subversion of immune mechanisms in autoimmunity and advanced aging. The programs in basic immunology and infectious diseases interact in efforts to develop new vaccination strategies. Medical students are encouraged to participate for elective credits in the research programs of their interest. The department serves as a World Health Organization Collaborating Center for Rickettsial Reference and Research.

UNDERGRADUATE MEDICAL PROGRAM

Second Year

MMIC 520. Medical Microbiology and Immunology (8). First semester. Though the precise time distribution will vary throughout the course, there will be an average of five lecture hours and seven hours in laboratory and group conferences per week. This course begins with an introduction to basic principles of immunology and then proceeds to consider the major groups of bacteria, spirochetes, fungi, rickettsiae, viruses and parasites that cause human disease. Emphasis is placed upon an analysis of the properties of microorganisms thought to be important in pathogenesis of infection and interaction with host mechanisms, epidemiology, and control measures. (Staff)

ELECTIVES

Students are encouraged to take elective work throughout their training. The following are designed specifically for medical students:

MMIC 542. Tropical Medical and International Health.

MMIC 589. Research in Microbiology. (Staff)

A number of Graduate School courses are also available to qualified students. Interested students should contact the department for details.

Neurology

Department of Neurology
Professor and Chairman
Kenneth P. Johnson, M.D.

Neurology is the study of the normal and diseased nervous system that includes central, peripheral and neuromuscular systems. Faculty members participate in courses in all four years of undergraduate medical education. While only a relative few medical students will choose careers in medical or surgical neurology, or in the basic neurosciences, all medical graduates must have sufficient understanding of the basic structure and function of the nervous system to perform a satisfactory neurological examination, recognize and treat the many common neurological disorders and know when to refer the patient to a neurological specialist. Of special importance is the ability to distinguish between functional and organic neurological symptoms or signs.

The discipline of neurology has maintained close ties with basic science and by its complex but logical nature, has typified the scholarly aspects of medicine. Recent methodological and scientific advances have created a new and therapeutically oriented specialty that is represented in the philosophy and goals of this department.

RESEARCH INTERESTS

Research activities, at both the basic neuroscience and the clinical levels, play an important role in the activity of the department. A broad program in neuroimmunology and biology is under way. The department holds a demyelinating diseases clinical center grant from NIH and in the last four years has been one of the most active centers in the United States and Europe in the conduct of trials of new forms of therapy for multiple sclerosis. Basic science and clinical studies in the demyelinating diseases are closely integrated.

Several department members are active also in the study of cerebrovascular disease and its consequences. A clinical stroke center funded by NIH has also been established. Special emphasis has been placed on the application of computer sciences to the diagnosis and treatment of stroke and a strong departmental program studies language disorders. A very active program in diseases of peripheral nerve and muscle has been undertaken as well. Special emphasis has been placed on the pathogenesis of Guillain-Barre syndrome and the treatment of myasthenia gravis. A highly developed program is focused on epilepsy with special interest in cases that fail medical therapy and must be considered for neurosurgery. Active research at the molecular level is under way into neurologic degenerative diseases especially Alzheimer's Disease and Parkinsonism.

An expanded program in neurorehabilitation has been developed. Rehabilitation sites for neurologically damaged patients are at Montebello and Kernan Hospitals in Baltimore. Specialized research programs are being developed primarily in the rehabilitation of stroke, head injury, spinal cord injury and multiple sclerosis patients.

UNDERGRADUATE MEDICAL PROGRAM

First and Second Years

NEUR 510. Neurological Sciences I. Lecture demonstrations of clinical cases constitute an integral part of this course. There is emphasis on correlation of anatomy and physiology with clinical material. Neurologic aspects of physical diagnosis are taught in the second year of medical school with instruction in performance of the normal neurologic examination as well as examination of selected patients with neurologic disorders. (Dr. Price)

NEUR 520. Neurological Sciences II. In collaboration with the Department of Pathology, and with contributions from other clinical and basic science departments, there is a correlative course given in the second year of medical school in which pathology of the nervous system is correlated with clinical disease. (Dr. Kristt)

Third Year

NEUR 530. Neurological Sciences III. All members of the third-year class have a three-week clerkship on the neurology-neurosurgery service at the University of Maryland Medical System or the Baltimore Veterans Administration Medical Center. A didactic series of lecture-demonstrations is given by the neurology and neurosurgery faculty, and students attend the combined conferences in both disciplines. In addition, students attend rounds and may assist in the performance of some procedures. Under house staff and attending staff supervision, students are responsible for the care of patients with neurological disorders. (Dr. Vriesendorp)

Electives

NEUR 541. Clinical Electives. After completion of the third year, students are offered a variety of clinical experiences on the neurological service at the University of Maryland Medical System, Mercy Hospital, Montebello Rehabilitation Center, St. Agnes Hospital, Baltimore Veterans Administration Medical Center and Kernan Hospital. The neurologic examination of the patient is emphasized, as well as the study and application of a wide variety of specialized neurologic diagnostic techniques. Each student will become proficient in taking a neurologic history, performing a neurologic exam, formulating a reasonable diagnostic impression or differential diagnosis, a plan of investigation and management for several of the more common neurologic problems. (Neurology Faculty)

NEUR 548. Neurological Research Electives. In all four undergraduate years, a limited number of students will have the opportunity to work with individual members of the department in the following areas: 1) cerebrovascular physiology; 2) neuromuscular research; 3) neurophysiology; 4) neurochemistry; 5) neurovirology and immunology; 6) computers and neurology; 7) epilepsy; 8)

degenerative disorders; and 9) molecular-biology and the nervous system. (Drs. Dmytrenko and Hilt)

FELLOWSHIPS

Students who have completed their first, second or third years and have an interest in neurologic sciences may apply for additional training in clinical neurology or in one of the research laboratories of the department. Qualified students may receive remuneration as fellows for the 10-week fellowships taken during vacation periods.

GRADUATE STUDIES

There is a fully approved three-year training program in the specialty of neurology at the University of Maryland Medical System. This provides for clinical training as well as rotation through the associated basic science disciplines. In addition, fellowships are available for subspecialty neurology training, such as EEG, EMG, stroke, neuroimmunology and rehabilitation. For further information contact the department chairperson.

REHABILITATION MEDICINE

Division of Rehabilitation Medicine
Professor and Head
Kenneth P. Johnson, MD

The School of Medicine has developed a research and training center in the area of neurologic rehabilitation with the full knowledge that current life-saving expertise in the fields of trauma (head and spinal cord injury), combined with major technological advances in medical and surgical neurology, has yielded and will continue to yield the most severely disabled patients. There is no indication that the incidence of neurological disability will decrease; more likely it will increase. Specialized research programs are under way in the areas of head injury recovery, controlled reassessment of rehabilitation techniques and improved communication in aphasic patients using computer assisted language.

The Division of Rehabilitation Medicine is committed to the education of medical students, resident physicians, physical therapists and other allied health professionals. Expectations for the next decade indicate that the rehabilitation field in this country is not going to wait for residency programs to train the physiatrists needed to provide professional direction for neurological rehabilitation programs. Accordingly, neurological rehabilitation probably will depend on other neurologists, internists, pediatricians, and neurological and orthopedic surgeons to carry the load. These physicians will need not only appropriate training in rehabilitation management, but exposure to the frontiers of fundamental research in neuroscience, particularly in the areas of neuroplastic-

ity and recovery of function. To this end a two-year fellowship program in neurologic rehabilitation has been established.

Obstetrics and Gynecology

Department of Obstetrics and Gynecology

Professor and Chairman

M. Carlyle Crenshaw, Jr., MD

The department provides a learning experience that encourages each student, regardless of ultimate career choice, to develop professional attitudes, diagnostic skills and knowledge relevant to the human female and to her sexual and reproductive systems. This experience enables each student to assume more effective responsibility for the general delivery of health care to the adolescent, adult and aging female and to the newborn.

The student is taught to recognize more accurately those patients who require special gynecologic consultation. Health-related social problems such as family planning are discussed as well as other aspects of population control, sexual difficulties, sterilization and induced abortion.

The educational material is presented so as to familiarize students with all sources of knowledge relevant to these subject areas. Students may extend their knowledge and skills in a direction and depth appropriate to current and ultimate career goals. Students are also encouraged to take electives in basic, clinical and social research.

The service roles focus on the general areas of obstetrical and gynecologic care. Obstetrics deals with a high-risk pregnancy population and provides excellent educational opportunities for both student and resident. Specialty clinics in endocrinology, complicated pregnancy, cancer, pre- and postoperative evaluation and family planning provide specific, specialized areas of instruction in addition to serving large numbers of patients. Cancer detection and therapy plays a major part in the gynecologic program.

The department utilizes audiovisual aids to enhance the educational experience of both medical students and residents. The faculty also contributes to the postgraduate educational programs at the University of Maryland Medical System and throughout the state.

UNDERGRADUATE MEDICAL PROGRAM

Third Year

OBST 530. Clinical Clerkship. Students are assigned to obstetrics and gynecology for a period of six weeks. As clinical clerks they participate in the original diagnostic studies, pelvic surgical procedures and postoperative care of hospital-

ized patients. Instruction in prenatal and gynecologic outpatient care is accomplished in the outpatient department. Seminars and departmental conferences with the attending staff and house officers are employed for teaching the art of correlating observations, diagnosis and therapy. Frequent and close contact with faculty is achieved by means of a preceptorial system that assigns a group of two or three students to a member of the faculty for the entire clerkship. As an alternative to the clerkship at the University of Maryland Medical System, a similar instructional program is offered to a limited number of students by the obstetrics and gynecology departments at Mercy Medical Center, Harbor Hospital Center and St. Agnes Hospital. (Staff)

Fourth Year

OBST 541. Obstetrics and Gynecology Elective. The student may choose to spend a four-week elective in one of five subspecialty areas which include high-risk obstetrics, endocrinology, oncology, ambulatory ob/gyn and human genetics. (Staff)

Affiliated Hospital Electives: Electives are available at Mercy Medical Center, Harbor Hospital Center and Sinai Hospital.

Several additional electives are listed with the Office of Student Affairs.

Ophthalmology

Department of Ophthalmology
Professor and Chairman
Richard D. Richards, MD

The Department of Ophthalmology offers electives during the junior and senior years in clinical ophthalmology and research ophthalmology. For the clinical clerkship, time is divided among the outpatient clinic, ward and operating room. Students are expected to gain experience with diagnostic instruments used in ophthalmological evaluations. Patients with a wide range of diseases are seen in the clinic where faculty with expertise in all ophthalmological subspecialty areas are present. Conferences and grand rounds are included in the program. Self-instructional aids are available.

RESEARCH INTERESTS

Research efforts of the Department of Ophthalmology currently concentrate on ocular changes from diabetes mellitus and ocular toxicity of radiant energy.

Other projects include biochemical effects of aldose reductase and specific inhibitors on the lens, including oxygen toxicity to the lens, particularly as related to light-induced damage. Also, projects related to hormonal control of retinal pigment epithelium, as well as experimental ocular pathology, form a major part of our research program. Opportunities exist for elective participation by qualified students in this active program of ophthalmic biochemical research. Postdoctoral fellowships in ophthalmic biochemistry are also available.

GRADUATE PROGRAM

A three-year residency program providing clinical training is offered at the University of Maryland Hospital, with rotations to Mercy Hospital and the Wilmington, Delaware VA Medical Center. Appointment is by application to the Department of Ophthalmology, University of Maryland Medical System.

POSTGRADUATE PROGRAM

Special courses for both nonspecialists and ophthalmologists are given at various times throughout the year by the Program of Continuing Medical Education.

Pathology

Department of Pathology
Professor and Chairman
Benjamin F. Trump, MD

The primary goal of the Department of Pathology is the better understanding of human disease with emphasis on mechanisms of disease and changes occurring at the subcellular level and in molecular terms. The student achieves this goal in three phases: 1) by acquiring the basic principles of pathology and applying those principles to the diagnosis and study of health care delivery as expressed in diagnostic areas such as surgical pathology, clinical pathology, cytology, forensic pathology and autopsy pathology; 2) by establishing a philosophy of critical evaluation and judgment concerning the problems of health and disease in humans; and 3) by developing feelings of personal responsibility and ethics for the practice of medicine.

The department's philosophy is that the study of disease includes both structure and function and is carried out from the level of the patient to that of the molecule.

The student is exposed to anatomical and clinical hospital pathology services with additional training at Baltimore Veterans Administration Medical Center and other local hospitals.

UNDERGRADUATE MEDICAL PROGRAM

Second Year

PATH 501. General and Systemic Pathology. The essentials of pathology are covered in such a way as to form a good foundation for the student's continuing medical education. The course is divided into "general" or pathobiology and "systemic" pathology. It starts with the study of the basic principles of pathology as embodied in the areas of cell injury, inflammation, immunopathology, neoplasia and environmental and forensic pathology. These are followed by the study of diseases of the various organ systems. Pathophysiology and the study of mechanisms of disease, as well as morphology, are stressed. Various disciplines are integrated in this approach and clinical correlative sessions provide opportunities for application to clinical situations. The course consists of lectures, small group laboratories and seminars. The laboratory sessions are in smaller groups under the direction of faculty members assigned to each student group. (Drs. Trump, T. Jones and R. Jones)

ELECTIVES

Supplementing the core program are more than 20 course offerings for freshman, sophomore and senior medical students. These opportunities span a wide range of departmental activities from system-oriented courses such as renal, pulmonary, neurological or cardiovascular pathology to process-oriented instruction such as environmental pathology, carcinogenesis and research seminars. The latter are conducted with the aid of a number of guest speakers who are leading authorities in their fields. Research and clinical preceptorships are encouraged.

Other courses are of more general interest and include seminars in clinical pathology or clinical clerkships in Baltimore area hospitals. Medical students also have access to courses in experimental pathology such as histochemistry, tissue culture or pathological biochemistry.

Most of the aforementioned courses, conforming with the 4-1-4-1 arrangement of the freshman year, are offered in January and June while others are given during the regular semester as longitudinal electives. For course listing, time and content description consult the pathology section in the appropriate elective catalogs.

Advanced Accelerated Program in Pathology (AAPP). The AAPP admitted the first group of students in the fall of 1975 in an effort to permit early specialization and target-oriented education. The track in pathology begins in the freshman year. It makes use of all the resources of the Department of Pathology, and includes three types of experience: 1) exposure to the practice of pathology, 2) study of one selected field of study and 3) exposure to research. Five students are admitted during their first year. They are required to fulfill all the requirements of the medical school program; however, they are not pledged to seek a career in the field of pathology. The training in the track program should provide the student with the knowledge of a one-year residency program. Time spent in

training within the track program can count towards elective or residency time. (Dr. Mergner)

RESEARCH INTERESTS

Research efforts in the Department of Pathology focus upon the pathobiologic mechanisms of human disease at the cellular, subcellular and molecular levels. Current projects involve a broad spectrum of diseases to include cancer, immunologic disease, heart disease, shock, infectious disease and aging.

Cancer research efforts focus upon accurately defining the sequence of events within cells following their exposure to confirmed carcinogens, mutagens and environmental toxins. This involves the development of varied strategies for assaying human risk from environmental pollutants and the development of animal and fish models for human disease with environmental etiologies.

Research efforts in heart disease are directed toward providing a definitive description of the mechanisms that lead to cell death subsequent to the depletion or complete loss of oxygen supply. Identification of parameters whose manipulation might result in impeding or halting cell death and development of improved methods of therapy for preventing the damaging effects of shock are integral components of this research.

Faculty research projects in infectious diseases focus on the delineation of the mechanism by which microbes invade and destroy human cells; the identification of microbial antigens with the capacity to elicit an autoimmune disease in the host; the study of mechanisms of immunologic injury as related to complement-mediated lysis; immune complex diseases and autoimmunity; and the analysis of the events leading to cell death as a consequence of the normal process of aging.

GRADUATE PROGRAM

The Department of Pathology offers programs of study leading to the PhD degree or the combined MD/PhD degree in medical pathology, the PhD degree in forensic toxicology and the MS degree in pathology. Areas of concentration offered in the MS degree program are medical pathology (including anatomic pathology and clinical chemistry) and forensic toxicology. The master's and doctoral programs train individuals for research and service in pathology and related fields. Research programs use modern techniques, including x-ray microanalysis, quantitative microscopy, flow cytometry with cell-sorting capability, spectrofluorometry and calcium imaging.

The program leading to the PhD in medical pathology includes comprehensive training in experimental pathology with emphasis on the pathogenesis of cell injury and carcinogenesis; environmental pathology; and immunology. Students working toward combined MD/PhD degrees in medical pathology are enrolled simultaneously in the School of Medicine and the Graduate School in specially tailored programs designed to meet their specific goals

and research interests as physician-scientists. The PhD program in forensic toxicology (legal medicine) includes comprehensive training in toxicology, gross anatomic pathology related to toxicology, instrumental analysis, medicinal chemistry and pharmacology.

The program leading to an MS degree in pathology is highly individualized. Concentrations in medical pathology and forensic toxicology are designed for students seeking training in laboratory work and research methods. Training in anatomic pathology, one of three such programs in the United States, prepares students for certification as a pathologist's assistant. Training in clinical chemistry prepares individuals for certification in clinical chemistry and for advanced work in this discipline.

For details of admission requirements and course offerings, see the pathology section in the Graduate School catalog.

Pediatrics

Department of Pediatrics
Professor and Chairman
Michael A. Berman, MD

The efforts of the Department of Pediatrics are directed towards providing the best possible services for children while deriving an educational program to meet the needs of individual students, physicians and other health care workers. By preparing physicians and other health care professionals to provide high quality, comprehensive care for infants, children and adolescents, the department can best satisfy the vital need for child health services in the community. Included among the providers of health care are not only pediatric generalists, but also basic scientists, health educators, subspecialists, medical center academicians, community health planners and students of all of these disciplines. The Department of Pediatrics seeks to play a dynamic role in the development of these health professionals throughout all levels of their education—undergraduate, graduate and postgraduate.

A clinical clerkship experience is offered with inpatients, full-term infants and ambulatory patients. A wide variety of electives is also available providing opportunities to explore aspects of preclinical and clinical pediatric research, additional individualized inpatient and ambulatory clinical clerkships, specific preceptorships, subspecialty experiences and community pediatrics.

RESEARCH INTERESTS

The research efforts of the Department of Pediatrics are directed toward understanding problems related to abnormal development. These studies employ

sophisticated research strategies and the newest technical equipment to obtain answers to problems in the perinatal, neonatal, childhood and adolescent periods. Several major categories of research include an investigation into the causes and treatments of mental retardation, a multidisciplinary examination of the various aspects of sudden infant death syndrome, the examination of immunological and microbiological factors associated with problems of early development, a series of studies related to neonatal metabolism and a well-defined group of psychological studies. These and other research efforts have been successfully integrated into the service and teaching program within the department.

UNDERGRADUATE MEDICAL PROGRAM

First Year

PSYCH 510. Behavioral and Social Sciences. Presentations are made characterizing aspects of growth and development.

Second Year

PEDI 521. Pediatric Physical Diagnosis. Individualized experience is offered in taking a pediatric medical history and in learning the techniques used in the examination of infants, children and adolescents. (Dr. Lentz)

Third Year

PEDI 530. Clerkship. Students are assigned as clinical clerks for a period of six weeks at the University of Maryland Medical System, Mercy, Sinai, Union Memorial or South Baltimore General hospitals. Each of these facilities provides clinical experience in inpatient pediatrics (including nurseries) as well as in ambulatory services for children and adolescents.

Regularly scheduled conferences include pediatric subspecialty areas and are supplemented with chart conferences, case discussions, evaluations of neonatal mortality and journal reviews. Small group tutorials cover concepts of pathophysiology and the therapeutic management of pediatric patients. The total impact of the illness on the child and family is emphasized. The student is encouraged to become familiar with all aspects of pediatric practice. (Dr. Nair)

Fourth Year

PEDI 540. Pediatric Electives. The variety of elective experiences include student internships in full-term and intensive care nursery settings, on wards and within ambulatory care centers. Laboratory research studies may be pursued as well as experiences in specific pediatric subspecialties. Please refer to the medical school electives catalog. (Dr. Weaver)

PEDI 548. There is a possibility of spending the required eight-week senior student internship on the pediatric wards of the University of Maryland Medical System or one of the affiliated hospitals.

PEDI 541. Pediatric ambulatory sites are available for the required eight-week senior ambulatory rotations.

Minimester Electives

The department offers a wide range of experiences including some in preclinical and clinical research. For a complete listing, please refer to the medical school minimester catalog.

Pharmacology

Department of Pharmacology and Experimental Therapeutics

Professor and Chairman

Edson X. Albuquerque, MD, PhD

The department's objectives are to teach undergraduate medical students those principles underlying the distribution, metabolism, mechanism of action and toxicity of therapeutic agents or substances. At the graduate level, three areas of studies are incorporated: 1) training in the modern techniques of pharmacology (molecular biology, receptor biochemistry, cell biology, tissue culture, radioimmunoassay, electron microscopy, traditional electrophysiology, patch clamping, etc.); 2) research directed toward study of new drugs and increasing effectiveness of existing drugs used in treatment of human diseases (e.g., in areas of virology, oncology, neuropeptides); and 3) research to better understand actions of drugs and toxins (e.g., drugs acting at the neuromuscular junction or elsewhere in the central and peripheral nervous system, endocrine drugs, chemotherapeutic agents, insecticides).

The Graduate School catalog lists a number of graduate courses and electives offered to medical students. Arrangements for combined MD/PhD training are made on an individual basis.

UNDERGRADUATE MEDICAL PROGRAM

Second Year

MPET 520. Medical Pharmacology. The pharmacological basis for therapeutics is presented with an emphasis on the mechanism of drug action. (Dr. Albuquerque and faculty)

Minimester Electives

The department faculty offers minimester and summer courses tailored to the needs of individual students. Consult the electives catalog for further details.

Physiology

Department of Physiology
Professor and Chairman
Mordecai P. Blaustein, MD

The Department of Physiology provides lecture, laboratory, and seminar courses in the principles of human physiology for medical students. Also offered are advanced courses in specialized areas of physiology for graduate students, fellows, and interested medical students (see Graduate School catalog).

RESEARCH INTERESTS

The faculty of the Department of Physiology is dedicated to elucidating fundamental new information about the mechanisms that underlie a variety of physiological processes. Many of the department's research programs focus on four general areas: cell and membrane physiology, neurobiology, reproductive endocrinology and cardiovascular/renal physiology. The research programs encompass a number of topics with direct clinical relevance, including projects related to aging, cardiac arrhythmias, contraception, diabetes, epilepsy and hypertension. Medical students are encouraged to participate in research activities during summer and other elective periods. Opportunities for combined MD-PhD training are also available.

UNDERGRADUATE MEDICAL PROGRAM

First Year

MPHY 501. Principles of Physiology and Biophysics. Lectures, laboratory and conferences are offered during the spring semester. This foundation course provides students with a basic understanding of mammalian, and in particular, human physiology and biophysics. Its sections cover cellular, cardiovascular, renal, respiratory, gastrointestinal and endocrine physiology. Conference periods are used for clinical correlations, small group discussions and computer assisted simulations. (Drs. Blaustein, Selmanoff and faculty)

MPHY 511. Advanced Seminars in Physiology. This elective course offers an opportunity for a limited number of interested students (12 maximum) to enhance their understanding of certain areas of physiology by means of conferences and discussions with senior faculty members. Discussions enlarge upon recent developments and pathophysiological implications of the topics under discussion. Evaluation is based on a 6-7 page paper on one of the topics discussed. (Dr. Pinter and faculty)

MPHY 513. Neurological Sciences. (Also MANA 513) This course provides an introduction to neuroanatomy, neurophysiology, neurochemistry and clinical neurology. The structure and function of the central nervous system are presented in an integrated manner. Opportunities are provided for dissection of the human brain, microscopic examination of brain sections and laboratory experience involving the study of functional aspects of the nervous system. (Drs. Alger and Krueger and faculty)

Other Opportunities. Various minimester courses, advanced seminars and research in special areas of physiology are open to interested students during the elective period or other free time. A combined MD/PhD program requiring additional coursework and original research is offered for highly qualified medical students. (See Graduate School catalog for additional advanced courses.)

Fourth Year

MPHY 542. Seminars in Physiology Elective. Advanced seminars in selected fields of physiology (e.g. cardiovascular, renal, endocrine and neural) are offered, usually two each semester.

MPHY 548. Research Elective in Physiology in Selected Fields.

Psychiatry

Department of Psychiatry
Professor and Chairman
John A. Talbott, MD

The goal of undergraduate psychiatric education is to acquire an understanding of and an appreciation for the application of behavioral and psychiatric principles in patient care and health maintenance through an exposure to a progressive sequence of intellectual stimulations, clinical experiences and appropriate professional socialization. More specifically, the curriculum aims to assist the student in: 1) acquiring a foundation of knowledge regarding the psychological, sociological and humanistic aspects of the practice of medicine; 2) mastering basic interpersonal and psychiatric skills relevant to the management of patients with medical and/or emotional illness; 3) emulating attitudes and values that enhance the professional roles and practices of a physician.

The curriculum is divided into a core program which consists of required courses offered during the first three years of medical education, and an electives program which provides a variety of courses (clinical, didactic and research) for the students who are interested in furthering their knowledge and experience in some aspect of the theory and practice of psychiatry and its related fields. These

elective courses are offered during the January and June minimesters of the pre-clinical years and in the senior year. The four-year Combined Accelerated Program in Psychiatry (CAPP) is offered as an advanced elective track to selected students with a special interest in the behavioral sciences.

UNDERGRADUATE MEDICAL PROGRAM

First Year

PSYCH 510. Behavioral and Social Sciences. (72 hours). This interdisciplinary course provides a context for the integration of diverse behavioral science contributions that are relevant to the understanding of human behavior. Emphasis is on the emergence of a broader concept of life sciences that constitutes medicine, one that views the human organism holistically as a dynamic biological system whose inherent aspects of structure, organization, ontogeny and functioning are determined or influenced by developmental, intrapsychic, interpersonal and sociocultural factors. The course runs through both semesters for a total of 72 hours; 42 hours in the fall semester and 30 hours in the spring semester.

The purpose of the course is to assist students in: 1) acquiring a foundation of knowledge in psychological, sociological and humanistic aspects of the practice of medicine based on the study of the behavioral and social sciences and clinical psychiatry; 2) learning about the behavioral aspects of human development that change throughout the life cycle; 3) understanding physician-patient interaction in various clinical situations including death and dying and learning about basic psychophysiology of emotions and human interaction.

The course is presented in the form of lectures-presentations and small group sessions. Small group sessions are scheduled on a weekly basis throughout both semesters. Their purpose is to provide students with the opportunity to apply the concepts learned in class to medical practice situations.

First Semester: This section provides basic introductory concepts in the field of behavioral and social sciences, and is designed primarily to meet the needs of those students whose premedical curriculum did not allow sufficient exposure to these sciences. The central theme is man as an individual viewed from a developmental, intrapersonal, interpersonal and humanistic viewpoint, and his passage through the vicissitudes of the family life cycle. These basic dimensions of behavior are presented in the following course units: 1) human growth and development and 2) psychological, sociological and cultural aspects of health, illness and treatment.

Second Semester: This section views man in his transactions with the environment and in the context of larger systems. Its major focus is on the psychological, interpersonal and sociocultural aspects of illness and health care. Course units include: 1) physician-patient interaction and 2) issues of dying, death and grief. In addition, the second semester contains a unit on "brain and behavior."

Second Year

The goal of sophomore psychiatry is to provide students with basic psychiatric interviewing skills and with a foundation of clinical knowledge in the area of psychopathology and psychiatric diagnosis as a preparation for their junior clerkship in psychiatry. This sequence is organized around two courses as follows:

Psychiatric Interviewing/History Taking. This course is part of the Introduction to Clinical Practice (ICP) which is devoted to specialty physical diagnosis and examination (psychiatry, pediatrics and neurology).

The psychiatric course is devoted to psychiatric interviewing, history taking, and mental status examination. Rotation is two hours a week for six weeks (12 hours), which is offered during the fall semester for 12 weeks (two rotations) on Friday afternoon and again in the spring semester for another 12 weeks (two rotations) on Friday afternoons.

The course uses a small group format, in which groups of five students meet with an instructor for six two-hour sessions. In the first session the instructor reviews the general principles and goals of psychiatric interviewing and mental status examination, and interviews a volunteer psychiatric patient from the inpatient service in the small group. Each week thereafter each student interviews another patient before his small group. Following the interview, the group discusses the interviewing technique and describes the psychopathology elicited by history and mental status. Each week, as an assignment, the students write up either a comprehensive mental status examination of the interview they witness or a complete psychiatric history with mental status included. The write-ups are corrected by the instructors and returned to the students as an important source of feedback in improvement.

There are about 30 students per six-week rotation assigned to six groups.

PSYCH 520. Psychopathology (60 hours). This course is designed to provide students with the basic concepts of clinical psychiatry including psychopathology and psychiatric treatment modalities. It is scheduled in a three-week block at the beginning of the spring semester concurrently with the Epidemiology and Preventive Medicine and Ethics courses.

The course format is based on brief lectures, audiovisual demonstrations (videotapes, films) and small group sessions. At the beginning of the course each student is given an instruction handbook, handouts, reprints, outlines and a list of videotapes to be presented.

CLINICAL YEARS

PSYCH 530. Junior Psychiatry Clerkship. (6 weeks) The clinical clerkship in psychiatry is the main clinical psychiatric experience of a University of Maryland medical school graduate. It is usually taken in the third year and is a six-week intensive experience combining inpatient and outpatient work in which the student is exposed to a variety of psychopathologies as well as a variety of treatment

modalities. Under the preceptorship of a psychiatry resident and a ward attending, the student is assigned his own patients and families to work with. This involvement with and responsibility for patient and family provide an ideal setting in which the student, under supervision, can apply the psychosocial concepts he learned in his first year of behavioral sciences, with the concepts of psychopathology he learns in his second year and the clinical skills of psychiatric interviewing, history taking and mental status examination. Usually the student becomes an integral part of the ward milieu and treatment team.

The clerkship involves student assignments to the following training sites: Institute of Psychiatry and Human Behavior (IPHB), Walter P. Carter Center, Spring Grove Hospital and Baltimore Veterans Administration Medical Center.

Students are assigned to both inpatient adult wards (two students per ward) and outpatient clinics. Night calls are required for all students. In all affiliated training facilities, students are assigned to wards or clinics under the supervision of residents and attending/clinical faculty.

All students are required to attend the following didactic courses and conferences, which are offered on each Tuesday of the six-week rotation:

- Liaison/Consultation Psychiatry (6 hours)
- Clinical Case Conference (9 hours)
- Alcoholism and Drug Abuse (6 hours)
- Psychopharmacology & Patient Management (6 hours)
- Basic Psychiatry Review (6 hours)
- Child/Adolescent Psychiatry (3 hour)
- Consultation/Liaison (3 hours)

Students assigned to the inpatient wards of the IPHB and those of the affiliated hospitals are required to attend ongoing clinical case conferences, ward meetings, staff meetings, and other clinical activities.

ELECTIVES

The Department of Psychiatry offers elective courses in all four years of the medical curriculum. Elective courses scheduled in the Year I and Year II minimesters (January and June) span a variety of topics in behavioral sciences. Elective courses offered during the clinical years include: inpatient psychiatry, community psychiatry, emergency psychiatry, forensic psychiatry, child psychiatry, geriatric psychiatry, substance abuse and consultation/liaison psychiatry.

Combined Accelerated Program in Psychiatry: CAPP Program. This elective track has become nationally visible for its success in engaging students in psychiatry through an advanced four-year curriculum that begins in the freshman year. In addition to participating in the psychiatry program, students are required to fulfill all of the requirements of a standard four-year medical curriculum. The

program has continued to admit 12 freshman students each year. From the first month of the freshman year, the track provides an unfolding progression of combined didactic and clinical experiences in the behavioral sciences and in clinical psychiatry.

A large clinical faculty is involved in providing didactic courses, clinical supervision and continuing case seminars. About 30 to 40 percent of these students choose a career in psychiatry.

Radiation Oncology

Department of Radiation Oncology
Professor and Chairman
Omar M. Salazar, MD

The Department of Radiation Oncology is divided into six divisions: 1) education; 2) clinical radiation; 3) radiation research; 4) clinical physics; 5) nursing and 6) administration, representing the various areas of interest within this specialty. All are closely interrelated to achieve improved management of the cancer patient.

The medical student is offered a broad exposure to oncology with emphasis on principles of radiation oncology, biology and physics through lectures, case presentations, demonstrations and participation in New Patient and Follow-up Clinics. General information concerning biology, pathology and behavior of cancer is discussed. The indications and applications of the different types of radiation are presented. The use of combined modalities therapy in the management of the cancer patient is emphasized.

RESEARCH INTERESTS

Departmental research efforts are focused upon many areas of oncology. The use of radiation as a systemic treatment agent, brachytherapy, hyperthermia, neuro-oncology, microcirculation of tumors and fractionation schemes represent several departmental research projects.

UNDERGRADUATE MEDICAL PROGRAM

Third Year

During a three-week rotation through radiology, radiation oncology and nuclear medicine, students will spend three days in radiation oncology. A series of lectures designed to familiarize students with the principles of the specialty are given. Students also participate in conferences, clinics and patient management.

Fourth Year

Elective in Radiation Therapy. Students interested in oncology are offered an opportunity to participate as members of the radiation oncology team. They become familiar with the evaluation, management and follow-up of cancer patients. Included are treatment planning, dosimetry and the use of interstitial and intracavitary sources of radionuclides.

GRADUATE PROGRAM

An approved four-year residency program in radiation oncology is offered at the University of Maryland Medical System. Teaching is carried out through didactic lectures, clinics and numerous teaching conferences with emphasis on patient care, under the supervision of a full-time staff. Elective time is spent in related oncological specialties to promote the multidisciplinary concept of management of patients with cancer.

Surgery

Department of Surgery
Professor and Chairman
Anthony L. Imbembo, MD

The Department of Surgery is organized into nine divisions: general surgery, emergency medicine, neurological surgery, orthopaedic surgery, otolaryngology, plastic and reconstructive surgery, surgical services for infants and children, thoracic and cardiovascular surgery and urology. Many faculty participate in the teaching of anatomy, pathology and physiology, and almost all participate in formal courses during the clinical years. During the junior year, all students must complete the 12-week clinical clerkship in surgery. Six weeks are spent in general surgery with the remaining time divided among subspecialty rotations of the students' choosing. The general surgical clinical rotations are based at the University of Maryland Hospital, Mercy Medical Center and the Baltimore Veterans Administration Medical Center.

Electives in surgical research and summer fellowships are available to students in all four years. More extensive clinical experience with greater patient responsibility is offered by all divisions as subinternships and electives during the fourth year.

The surgical clerkship exposes the student to disease entities that can or should be treated by operative intervention and to the physiologic and metabolic consequences of such intervention. Students learn to recognize conditions that will require surgical consultation. They gain an appreciation of wound care as well as familiarity with basic emergency procedures. This course of study

enables the future internist, pediatrician or psychiatrist to discuss probable treatment and prognosis of various surgical diseases with patients. Further, students are given the opportunity to explore various surgical disciplines and to participate fully in the daily activities of the surgical teams.

Graduates of approved medical schools may be considered for residencies in general surgery, emergency medicine, neurological surgery, orthopaedic surgery, otolaryngology, pediatric surgery, plastic and reconstructive surgery, thoracic and cardiovascular surgery and urology.

GENERAL SURGERY

Division of General Surgery

Professor and Head

Anthony L. Imbembo, MD (chairman)

UNDERGRADUATE MEDICAL PROGRAM

Third Year

The teaching of general surgery is conducted on the inpatient services of the University of Maryland Medical System, Baltimore Veterans Administration Medical Center and Mercy Medical Center. Students are divided into groups for continuous assignment to individual patient areas. Selected patients are assigned to individual students who are expected to record a complete history, the results of a physical examination and required laboratory studies. The differential diagnosis, final diagnosis and recommendations for therapy must be developed. Operating room participation is required, as part of the emphasis on continuity of patient responsibility. The program is designed to provide the student with a broad overview of the fundamentals of the discipline in a clinical environment by emphasizing contact with a wide variety of adult and pediatric patients. Clinical problems encountered usually include surgical infections, neoplasms, trauma, endocrine disorders, vascular disease, gastrointestinal problems, metabolic disorders and congenital defects.

The student is responsible for a core curriculum of surgical knowledge. Emphasis throughout the course is placed on problem solving through correlation of basic science information with clinical diagnosis and management. Didactic instruction is provided through lectures, small discussion groups, clinical conferences and grand rounds. Final evaluation is based upon clinical performance and final examination.

Fourth Year

The Department of Surgery offers eight week subinternships in general surgery at the University of Maryland Hospital and Mercy Medical Center for those students interested in a career in surgery or seeking to expand their knowledge of surgical disease. Various clinical electives in general surgery are offered at the University of Maryland Hospital, Mercy Medical Center and York Hospital. At

the University of Maryland Hospital, these electives include gastrointestinal surgery, surgical oncology, trauma surgery, vascular surgery, transplantation surgery and surgical intensive care.

Senior students are expected to be an integral part of the surgical team. Under supervision, they assume responsibility for initial patient evaluation in the clinics and emergency room, participate in pre- and postoperative care, attend in the operating room, participate in clinical conferences and take night call.

GRADUATE AND POSTGRADUATE PROGRAMS

A fully accredited residency in general surgery is based at the University of Maryland Hospital, incorporating important clinical experience at Mercy Hospital, Maryland General Hospital and the Baltimore Veterans Administration Medical Center. Additionally, fellowships are available in surgical endoscopy and laparoscopic surgery as well as trauma research under sponsorship by the National Institutes of Health. Continuing medical education is offered to practicing physicians in the form of lectures, conferences and short focused courses.

EMERGENCY MEDICINE

Division of Emergency Medicine
Associate Professor and Head
Robert A. Barish, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

During the third year, students are able to evaluate patients in the emergency room setting as part of the various surgical teams to which they are assigned. They begin to establish priorities for expedient formulation of differential diagnoses and prompt intervention.

Fourth Year

The Division of Emergency Medicine offers one-month electives during the senior year. Under direct supervision, the student functions as an intern, evaluating the patient by means of a complete history and physical examination and appropriate laboratory studies. Faculty offer monthly anatomic laboratories during which students learn minor procedures and suturing techniques. Didactic sessions include lectures and teaching rounds. Each student spends one shift riding an ambulance with Baltimore City paramedics.

GRADUATE STUDIES

The University of Maryland at Baltimore offers an accredited three-year residency program in emergency medicine. Residents rotate through Mercy Hospi-

tal, the Maryland Institute for Emergency Medical Services Systems as well as the University of Maryland Hospital.

NEUROSURGERY

Division of Neurological Surgery
Associate Professor and Acting Head
Walker L. Robinson, MD

UNDERGRADUATE MEDICAL PROGRAM

First and Second Years

In the first year the staff participates in a combined program with the Department of Neurology during which correlative lectures and demonstrations are given as part of various basic science courses; applications of the neurological examination are thereby demonstrated. During the second year there is active participation in the physical diagnosis course during which students examine neurological patients and discuss their findings with the faculty. Lectures on relevant topics are also presented as part of the pathology course.

Third Year

In the third year, each student spends three weeks on a combined medical and surgical neuroscience clerkship in which didactic instruction is combined with clinical experience on both services. Opportunities are provided for observing neurosurgical procedures and participating in all service functions.

Fourth Year

A fourth-year elective is available in general neurosurgery. Student responsibilities are significantly enhanced in the operating room and in daily provision of patient care. Special preceptorships in pediatric neurosurgery, neuro-oncology and neurotraumatology are also available.

In all years, students are invited to participate in the ongoing research programs of the division. The neuro-oncology laboratories focus on the study of the blood brain barrier, model brain tumors, tissue culture, microwave hyperthermia and chemotherapy. Experience in microneurosurgery, the pathophysiology of spinal trauma and neurophysiology is available.

GRADUATE STUDIES

A training program in neurological surgery is available to graduates of accredited medical schools who have completed one year of surgical residency. The five-year program is accredited by the American Board of Neurological Surgery. Fellowships are available in neuro-oncology and neurotrauma.

ORTHOPAEDIC SURGERY

Division of Orthopaedic Surgery
Professor and Head
John E. Kenzora, MD

UNDERGRADUATE MEDICAL PROGRAM

First and Second Year

Freshman or sophomore medical students may develop minimester electives in clinical orthopaedics or musculoskeletal research with individual members of the orthopaedic surgery faculty. Projects may include anatomic dissection, participation in ongoing projects of the biomechanics laboratory or clinical experiences emphasizing joint reconstruction, major trauma, orthopaedic oncology or spinal disorders.

In addition to these electives, the Division of Orthopaedic Surgery provides a lecture series that may be attended by students at any level.

Third Year

As part of the Basic Surgical Clerkship, general principles of orthopaedic surgery are taught and students are introduced to fracture recognition and management, orthopaedic reconstructive surgery and to common outpatient conditions affecting the musculoskeletal system. Students electing a clinical rotation during the clerkship participate in patient diagnosis and treatment, as well as surgery. They receive practical instruction in the uses and application of various splints and casting techniques. Student conferences and didactic sessions are conducted to supplement the division's intensive academic program.

Fourth Year

Senior students may participate in one-month electives during which they obtain internship-level clinical and surgical experience. Students are assigned to each of the University of Maryland Hospital services and to the trauma and spinal injury service. Students participate in the weekly orthopaedic conferences and seminars at the University of Maryland Medical System. Each of the senior electives is under the direction of an on-site full-time member of the orthopaedic faculty.

GRADUATE STUDIES

The Division of Orthopaedic Surgery offers an accredited four-year residency program. Clinical and surgical experiences are obtained on the foot, hand, tumor and chronic spine services at the University of Maryland Hospital. The major trauma and spinal injury services are located primarily within the Maryland Institute for Emergency Medical Services Systems, and the pediatric orthopaedic service at the James Lawrence Kernan Hospital. An intensive academic program in

basic science and clinical orthopaedic surgery has been developed for resident education. Each resident has a mandatory research assignment.

OTOLARYNGOLOGY

Division of Otolaryngology
Associate Professor and Acting Head
William C. Gray, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

The division provides an introduction to the diseases of the head and neck. A wealth of opportunity is provided for the student with an interest in communication disability and the clinical diseases where hearing, speech and language are of diagnostic significance.

Through lecture and direct tutorial instruction, faculty and resident staff provide students with basic information relevant to the fields of family practice, pediatrics, general surgery, neurosurgery, psychiatry and otolaryngology.

Third-year students who elect otolaryngology as part of the surgical clerkship are introduced to the care of patients with diseases of the ears, nose and throat. Auditory physiology and basic audiologic techniques are presented to each group by an audiologist. Introductory speech pathology is presented by a speech pathologist and the techniques of electronystagmography are introduced. Fundamental elements of otolaryngologic diagnosis and therapy are stressed during this program.

Fourth Year

Electives are offered in the following areas: basic clinical otolaryngology, advanced otolaryngology, communication disorders, investigation in otolaryngology, physiology of hearing and surgical otolaryngology.

GRADUATE STUDIES

Resident training in otolaryngology is available to three residents or two residents in alternating years. The training program is approved by the American Board of Otolaryngology and fully accredited by the Accreditation Council for Graduate Medical Education.

PLASTIC AND RECONSTRUCTIVE SURGERY

Division of Plastic and Reconstructive Surgery
Associate Professor and Head
Nelson H. Goldberg, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

As part of the basic surgery clerkship, students may elect a rotation on the plastic surgery service at the University of Maryland Hospital. Emphasis is placed on learning the principles of wound healing and wound care, the management of burns and the reconstruction of post-traumatic or ablative defects. Students are also introduced to the treatment of congenital abnormalities and cosmetic problems in both the inpatient and ambulatory environments. Daily teaching rounds provide students with an opportunity to participate in case presentations. Students accompany patients to the operating room and attend all teaching conferences.

Fourth Year

Electives are available to senior students interested in plastic and reconstructive surgery. Under supervision, the student functions as a subintern taking responsibility for pre- and postoperative care of selected patients.

GRADUATE STUDIES

The University of Maryland at Baltimore and Johns Hopkins University offer a combined three-year residency program in plastic and reconstructive surgery. Each year three residents enter this fully accredited residency training program and, upon completion, are eligible for examination by the American Board of Plastic and Reconstructive Surgery. Training takes place at the University of Maryland Hospital, the Johns Hopkins Hospital, the Maryland Institute for Emergency Medical Services Systems, Francis Scott Key Medical Center, Union Memorial Hospital, Children's Hospital and the Veterans Administration Medical Center.

SURGICAL SERVICES FOR INFANTS AND CHILDREN

Division of Surgical Services for Infants and Children
Professor and Head
J. Laurance Hill, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

The Division of Surgical Services for Infants and Children aims to provide students with a perspective on the unique problems encountered when caring for patients with pediatric surgical illness, teach management of these often complex problems and to introduce the delicate surgical techniques developed especially for young patients.

As part of the basic surgical clerkship, students may be assigned to the pediatric surgical team as one of their general surgical rotations. Each is assigned

patients to evaluate preoperatively, to accompany to the operating room and to manage during the postoperative period. Emphasis is placed on differential diagnosis, embryology, anatomy and developmental pathophysiology. Patients range in age from prematurity to adolescence. Exposures to the nursery, pediatric emergency room and intensive care units are an integral part of the experience. Didactic instruction is provided in the operating room, during teaching rounds, by case presentations and in conferences.

Fourth Year

During the senior year, students may spend one month on the pediatric surgery service functioning, under supervision, as a subintern.

GRADUATE STUDIES

The University of Maryland School of Medicine-Johns Hopkins University integrated training program in pediatric surgery offers an accredited two-year residency in pediatric surgery. The program requires board eligibility in general surgery with candidates applying during the fourth year of general surgery training. This residency participates in a match program with 25 centers in the United States and Canada.

THORACIC AND CARDIOVASCULAR SURGERY

Division of Thoracic and Cardiovascular Surgery

Professor and Head

Joseph S. McLaughlin, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

During the junior student surgical clerkship, students can elect a specialty rotation on the cardiothoracic service. They participate, along with the resident staff, in all service activities, patient care responsibilities and teaching conferences.

Fourth Year

The goal of the senior elective in cardiothoracic surgery is to present, in a clinical setting, the basic pathophysiologic principles of thoracic and cardiovascular surgery. The student becomes a member of one of the teams on the service and, under supervision, participates in the capacity of an intern. Emphasis is placed on diagnosis and management of the patient with surgical heart disease.

GRADUATE STUDIES

The three-year residency program, which admits one trainee each year, is accredited by the Residency Review Committee of Thoracic Surgery. Applicants must

be eligible for the American Board of Surgery examination on admission to the program. Residents are given an opportunity to assist and then perform all types of cardiothoracic operative procedures in a program designed to ensure progressive experience.

UROLOGY

Division of Urological Surgery
Professor and Head
Stephen C. Jacobs, MD

UNDERGRADUATE MEDICAL PROGRAM

Third Year

The curriculum is designed to introduce urologic principles as they relate to preservation of health through maximum renal function, normal urine storage and transport, an acceptable voiding pattern, treatment and prevention of urinary infection, identification and management of neoplasm in the urinary tract and male reproductive system and management of urolithiasis. Instruction is also given on disorders of the male reproductive tract including neoplasms, infertility and disturbance in sexual function.

During the basic surgical clerkship, students can elect a specialty rotation on the urologic service at either the University of Maryland Hospital or Harbor Hospital Center. Each student is assigned patients to evaluate, follow and present to members of the faculty. Daily rounds and conferences are held. The students observe and participate in diagnostic and operative procedures and attend the outpatient clinic.

Fourth Year

Senior students may participate in four-week subinternships in urology at the University of Maryland Medical System, Baltimore Veterans Administration Medical Center or at Sinai Hospital.

GRADUATE STUDIES

The residency program consists of four years of urologic training following two prerequisite years in general surgery. The third-year assistant residents spend six months at both the University of Maryland and Baltimore Veterans Administration Medical Centers. The fourth-year assistant residents divide this second year of urologic training between Johns Hopkins Hospital (pediatric urology) and the research laboratory. The fifth-year residents spend six months at Sinai Hospital and six months at University Hospital. The final chief resident year is divided between the University of Maryland Hospital and Baltimore Veterans Administration Medical Center.

INTIMATE HUMAN BEHAVIOR

S. Michael Plaut, PhD, Coursemaster

HCPR 512. Intimate Human Behavior (IHB) - Sexuality and intimacy are important and sensitive areas of our lives that for a variety of reasons often present communication difficulties. When questions or concerns arise, a physician or other health care provider is typically the first person from whom help and counsel are sought. A health care provider's ability to respond to these needs depends heavily on that individual's own level of comfort with these issues. The IHB course provides students with the opportunity to examine and assess their attitudes, feelings and beliefs about various dimensions of intimacy and sexuality, and to become familiar with current knowledge about human sexuality and treatment of sexual problems.

Teaching faculty include 12 lecturers and 30 small group facilitators representing various helping professions. The freshman course begins in November with a 2-1/2 day workshop spent viewing audiovisual materials - many of a sexually explicit nature - with small group discussion of their reactions to these films and related issues. Discussion is facilitated by experienced faculty and includes such topics as verbal and nonverbal communication, heterosexual and homosexual relationships, masturbation, sexuality in the elderly and the disabled.

The second part of the course, given during the Spring semester, includes a series of 12 weekly lectures. These are designed to provide students with the knowledge and skills needed to provide appropriate intervention. Topics include: anatomy and physiology of sexual function, assessment and treatment of sexual disorders, sexual counseling for patients with acute and chronic illnesses, pharmacologic effects on sexual function, sexual abuse of children and adolescents, sexuality throughout the life cycle and sexual issues faced by the health professional.

Grading

A letter grade is assigned based on: (1) required attendance at all November workshop sessions,* (2) examination to include both multiple choice and essay components at the end of the Spring semester, (3) submission of an Honors paper, if eligible, by earning an "A" in the course.

* A limited number of students who wish to participate in the workshop portion of the course with their partners may be offered the opportunity to do the workshop portion during a weekend in January rather than in November. Partners are assigned to separate groups and a nominal fee is charged for their participation.

GENETICS

Tina M. Cowan, PhD, Coursemaster

MANA 514. The first-year course provides an introduction to the application of basic genetic principles to the study of human health and disease. Topics covered include Mendelian inheritance, cytogenetics, population genetics, biochemical genetics, molecular genetics and clinical genetics. The importance of human genetics to the practice of medicine is stressed by the inclusion of clinical correlation sessions where students have the opportunity to hear patients and their families discuss the practical and emotional impact of genetic disease.

The course is taught by a combination of lectures, small groups and clinical correlate sessions. Problem sets for each small group session are distributed at the beginning of the semester. The small group sessions are designed to reinforce the information discussed in lecture, stressing problem-solving skills.

Grading

A midterm and a final examination are given. Both exams are comprised of a combination of multiple choice, short answer and problem-solving questions. The midterm constitutes one-third and the final constitutes two-thirds of the total grade.

INTRODUCTION TO CLINICAL PRACTICE (ICP)

David Stewart, MD, MPH, Coursemaster

HCPR 511. This program of instruction has as its objective training in the art as well as the science of medicine. This includes the practical skills of communication and the professional attitudes essential to the effective and humanitarian practice of medicine. Every effort is made to correlate basic science and clinical material.

Introduction to Interviewing and History-Taking

"...the interview, in my view, is the most powerful, sensitive and versatile instrument available to the physician. The interview serves many functions. Through it a relationship is initiated, the conditions and requirements for communication are established, roles and obligations are defined, the information necessary to delineate

disease and to characterize the patient and his life circumstances is collected, data processed, the patient and his family are prepared for decisions and judgments and instructed in care, and a human compact between patient and physician is achieved."

George Engel, M. D.

Introduction to Interviewing and History-Taking is given during the freshman year. It is an eight-week course which consists of lecture demonstrations during the first two weeks, followed by small group meetings in the remaining weeks. It is given in the second semester. The students meet once a week for four hours and are introduced to techniques in communication, listening, observation and interviewing. At the end of this course students are expected to feel more comfortable in interviewing a patient and taking a complete medical history.

Objectives

- To learn the rudiments of an appropriate medical interview, focusing on inquiry into the medical symptoms of the patient's present illness. The psychosocial factors of the patient's life related to his health have the same importance as the medical factors and must be elicited with tact and appropriate technique.
- To develop an appropriate physician-patient relationship by first focusing on the medical symptoms since these are the areas of complaint with which the patient introduces himself to the doctor. Thus techniques and appropriate logical history-taking will allow the doctor to penetrate the psychosocial area, obtain the information that he needs for a comprehensive diagnosis and elicit the patient's cooperation in his or her treatment.
- To understand how personal attitudes and values of both the physician and patient influence both the relationship that develops between them and the entire process of the physical and personality diagnosis and prescription and the therapy and rehabilitation.
- To recognize the effect of verbal and nonverbal communication and to use these to influence the physician-patient relationship.
- To be able to appreciate how an individual's values and ethics play a role in medical practice.

Organization of the Course

The class is divided into two groups and these again into smaller groups with one faculty instructor and up to ten students per group. The course opens with instruction in communication, listening, observation and non-verbal behavior, followed by instruction in how to meet the patient and start an interview. In the small groups these techniques will be practiced and there will be discussion of what can be learned from the information collected.

Topics to be covered include: how to elicit the chief complaint and the present illness, previous medical and surgical history, the patient's psychosocial history and the review of organ systems. Wherever possible, patient symptoms will be related to anatomic and pathophysiologic considerations. Audio-visual aids such as video taping will be utilized to teach proper interview technique.

Grading

Each student will receive a pass/fail grade for the freshman ICP course. This grade will be assigned by each appropriate instructor on the basis of student attendance, performance in medical interviewing and a written examination.

Instructors may use examinations, take-home problem-solving tasks, observations of student performance, attendance and any other appropriate techniques required to obtain data for a final semester grade. Attendance is mentioned because some ICP components are of short duration and if a student is not present for an adequate proportion of the course, he/she cannot be given a passing grade.

Programs

PROGRAM OF ONCOLOGY

Director
Joseph Aisner, MD

The University of Maryland Cancer Center was established by the Division of Cancer Treatment of the National Cancer Institute in 1965 as the Baltimore Cancer Research Center at the Wyman Park U.S. Public Health Service Hospital. In 1974 the center moved to the University of Maryland at Baltimore and remained an intramural NCI program under contractual arrangement between the NCI and the University of Maryland at Baltimore until 1982, when it became the University of Maryland Cancer Center. The clinical effort of the center was established as a separate clinical entity within the University of Maryland Medical System. Formal academic status was granted for the Cancer Center in the School of Medicine as the "Program of Oncology," and the Cancer Center faculty have academic appointments in various clinical and basic science departments of the School of Medicine.

Activities of the Program of Oncology include basic and clinical cancer research; student and house officer teaching and a strong focus on aggressive treatment and intense patient care in the 53-bed inpatient and outpatient services of the cancer center. In addition to full-time attending services on medical oncology and hematology, Program of Oncology faculty members provide a uniquely supportive program involving a multimodality approach to the treatment of patients with primary/secondary malignancy involving the central nervous system and lungs as well as patients on the gynecological and surgical services of oncology, genitourinary, otolaryngology and neuro-oncology.

The University of Maryland Cancer Center is a strong participant in new drug development and performs research on new anticancer drugs. Virtually every important drug in use in oncology today has been tested in this program, and the center has contracts in both the public and private sectors with a commitment to clinical and laboratory research. Pilot studies and Phases I, II and III Trials are performed, which run the gamut from testing efficacy and potential applicability of a given treatment program and establishing dose and toxicity limitations of new drugs, to comparing treatment programs for superiority of treatment, toxicity and outcome. These studies tend to be definitive treatment programs that have major impact on the practice of oncology nationwide. The faculty has a strong commitment to interinstitutional cooperative scientific trials and cancer research.

The cancer center's Laboratory of Immunology Research generated safety and efficacy data that played a key part in obtaining FDA approval for clinical use of genetically engineered recombinant alpha interferon. Since 1982 the cancer center has played an important role in studies of acquired immunodeficiency syndrome and related disorders.

Students and residents participate in weekly grand rounds and conferences, and students are encouraged to become involved in research.

MEDICAL AND RESEARCH TECHNOLOGY

Department of Medical and Research Technology

Professor and Chairman

Denise M. Harmening, PhD

The Department of Medical and Research Technology currently offers a major in clinical laboratory sciences (medical technology). Two additional majors are being investigated for future implementation; a cytogenetic technology major and a biomedical science/biotechnology major. University of Maryland at Baltimore's clinical laboratory sciences major combines the advantages of a major research university with the benefits of small classes and a low faculty-to-student ratio. As a component of this large academic health center, the Department of Medical and Research Technology affords students unusual opportunities to participate in a stimulating educational environment while gaining practical experience in clinical laboratory medicine.

Clinical laboratory sciences provides information crucial to the diagnosis and prevention of diseases, the management of patient therapy and the maintenance of health. Clinical laboratory scientists are involved in performing laboratory procedures ranging from identification of a microorganism, to providing blood for emergency transfusion.

Students complete a two-year preprofessional curriculum at the regionally accredited college or university of their choice. Those attending two-year institutions may transfer directly to the Department of Medical and Research Technology at the University of Maryland at Baltimore. Most students complete the professional curriculum in two years; however, a three-year part-time option is available for non-traditional students.

The clinical laboratory sciences concentration of study fulfills requirements set forth by the National Accrediting Agency for Clinical Laboratory Sciences and is accredited by the Committee on Allied Health Education and Accreditation on behalf of the American Medical Association.

CLINICAL AFFILIATIONS

During the final component of the program, students complete clinical practice courses in five specialty areas. Placement in clinical sites is guaranteed upon admission.

The department affiliates with 28 clinical facilities in the Baltimore-Washington area. The clinical facilities include hospital, community and military laboratories of various sizes, as well as independent laboratories. The number and variety of the clinical sites are assets that set UMAB's clinical laboratory sciences major apart from the rest and allow our students to experience several different work environments.

For additional information contact:

Academic Coordinator
Department of Medical and Research Technology
School of Medicine, University of Maryland at Baltimore
Allied Health Building
Penn and Lombard Streets
Baltimore, Maryland 21201
(410) 706-7663

PHYSICAL THERAPY

Department of Physical Therapy
Associate Professor and Chairman
Clarence W. Hardiman, PhD

The School of Medicine offers the entry level Master of Physical Therapy Program on the UMAB campus. Students complete three years of preprofessional course work prior to beginning their studies at UMAB.

Clinical experiences are provided in general/acute, rehabilitation, orthopaedic, sports medicine, pediatrics, geriatrics, industrial medicine and community health settings locally, and in centers located over a wide geographic area throughout the United States.

Successful completion of a three-year preprofessional program and the physical therapy program results in a Master of Physical Therapy degree and a certificate of proficiency in physical therapy.

Applicants must have a grade point average of not less than 2.7 and 90 prerequisite credits of which no grade of less than "C" is acceptable (15 of the 90 prerequisite credits must be at a 300-level or greater). A minimum of 40 hours of work or volunteer experience in a physical therapy setting and a current CPR certification are required. In addition, at least 70 prerequisite credits must be completed by the December 31 application deadline.

For additional information contact:

Department of Physical Therapy
School of Medicine, University of Maryland at Baltimore
Allied Health Building
Penn and Lombard Streets
Baltimore, Maryland 21201

Endowments and Gifts

CHAIRS

Dr. John M. Dennis Chair in Diagnostic Radiology
Dr. Martin Helrich Chair in Anesthesiology

PROFESSORSHIPS

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 Hale, Janet, PhD, Faculty Research Assistant
 Hanlon, Thomas, PhD, Research Associate Professor
 Harbin, Henry, MD, Clinical Professor
 Harnett, Patrick, PhD, Clinical Assistant Professor
 Hartmann, Peter H., MD, Clinical Associate Professor
 Hastings, Brian, MD, Medical School Assistant Professor
 Helsel, David, MD, Clinical Assistant Professor
 Hendrix, Elizabeth, Faculty Research Assistant
 Hepburn, Brian, MD, Clinical Assistant Professor
 Hershfield, Bruce, MD, Clinical Assistant Professor
 Hicks, C. William, MD, Clinical Assistant Professor
 Hogsten, Paul, MD, Instructor
 Holcomb, Henry, MD, Research Assistant Professor
 Holstein, Constance, Research Associate
 Horn, David S., MD, Clinical Assistant Professor
 Horton, Arthur Jr., EdD, Clinical Assistant Professor
 Hunt, Gerard, PhD, Associate Professor
 Irish, Donna M., Research Associate
 Jaffe, Jerome H., MD, Adjunct Professor
 Jahromi, Mahmood, MD, Instructor
 Jani, Sushma, MBBS, Clinical Assistant Professor
 Janofsky, Jeffrey, MD, Clinical Assistant Professor
 Jauch, Diana, MD, Research Associate
 Jefferies, Michael, MD, Clinical Assistant Professor
 Jeffries, Keith, Faculty Research Assistant
 Johnson, Jeannette, PhD, Medical School Associate Professor
 Kahn, Peter, MD, MD, Clinical Assistant Professor
 Kaiser, Theodore, MD, Clinical Assistant Professor
 Kakigi, Tatsuya, MD, Fellow
 Kalin, Harvey B., JD, MD, Clinical Assistant Professor
 Kankam, Jemima, MD, Clinical Instructor
 Kappelman, Murray M., MD, Professor
 Katz, Debrah M., MD, Clinical Assistant Professor
 Kaup, Bruce, MD, Clinical Assistant Professor
 Keill, Stuart L., MD, Medical School Professor
 Kelly, Gerard R., PhD, Adjunct Assistant Professor
 Kenny, Thomas J., PhD, Assistant Professor
 Khan, Peter A., MD, Clinical Assistant Professor
 Khazan, Tanya S., MD, Clinical Assistant Professor
 Kirkpatrick, Brian, MD, Research Assistant Professor
 Klein, Gary A., MD, Clinical Assistant Professor

Knowles, Frederick, MD, Clinical Assistant Professor
 Korek, Joan, PhD, Clinical Assistant Professor
 Koretzky, Martin B., PhD, Clinical Assistant Professor
 Krajewski, Thomas, MD, Clinical Associate Professor
 Kurland, Albert, MD, Research Professor
 Kutzer, Dennis, MD, Clinical Assistant Professor
 Lafferman, Jeffrey, MD, Clinical Assistant Professor
 LaGana, Christine M., PhD, Clinical Assistant Professor
 Lann, Helen, PhD, Medical School Assistant Professor
 Laurich, Ivan W., MBBS, Clinical Assistant Professor
 Layne-Gedge, Juanita, Faculty Research Assistant
 Leal, Carol, MD, Medical School Associate Professor
 Lehman, Anthony, MD, Associate Professor
 Levin, Frances, MD, Medical School Assistant Professor
 Levin, Leon, MD, Clinical Assistant Professor
 Levine, Jerome, MD, Research Professor
 Lewis, Anne C., MD, Clinical Associate Professor
 Lewis, Tad, Faculty Research Assistant
 Liberto, Joseph, MD, Clinical Assistant Professor
 Lion, John, MD, Clinical Professor
 Lipkin, John O., MD, Clinical Associate Professor
 Lockhart, Paula, MD, Clinical Assistant Professor
 Loewenstein, Richard, MD, Clinical Assistant Professor
 Mallott, David, MD, Medical School Assistant Professor
 Manzanera, Elena, Clinical Assistant Professor
 Marcus, Lori A., Instructor
 Maters, Patricia, Instructor
 McCabe, M. Rosalie, Clinical Assistant Professor
 McCann, Merle, MD, Clinical Assistant Professor
 McCarthy, Katherine, Faculty Research Assistant
 McClelland, Paul, MD, Clinical Assistant Professor
 McDaniel, Ellen, MD, Adjunct Associate Professor
 McDuff, David, MD, Medical School Assistant Professor
 McInnes, Mark W., Faculty Research Assistant
 McMaster, Owen, PhD, Faculty Research Assistant
 Medoff, Deborah, PhD, Instructor
 Merlis, Daniel, Clinical Assistant Professor
 Merryman, Mary Beth, Instructor
 Miller, Alan, MD, Clinical Assistant Professor
 Modarressi, Taghi, MD, Associate Professor
 Monopolis, Spyros, MD, Clinical Assistant Professor
 Monroe, Russell R., MD, Professor
 Moran, Marianne, Research Associate
 Morris, Phillip, MBBS, Research Fellow
 Moss, Donald, MD, Clinical Assistant Professor

Mott, Thurman, MD, Adjunct Associate Professor
 Munoz-Millan, Robinson, MD, Medical School Assistant Professor
 Munson, Robert, Research Associate
 Myers, C. Patrick, Research Associate
 Myhill, John E., PhD, Clinical Assistant Professor
 Nevitt, Jonathan, Faculty Research Assistant
 Nurco, David N., Research Professor
 O'Callaghan, P. Gayle, PhD, Clinical Assistant Professor
 O'Donnell, James, Instructor
 Okum, Marjorie, PhD, Clinical Assistant Professor
 Olsson, James, PhD, Clinical Assistant Professor
 Oseroff, Charles, MD, Clinical Assistant Professor
 Paskewitz, David, PhD, Clinical Assistant Professor
 Paul, Stephen, MD, Research Professor
 Peszke, Michael, MB, BCh, Clinical Professor
 Petetti, Frank, MD, Research Assistant Professor
 Phillips, Jay, MD, Clinical Assistant Professor
 Phillips, Sheridan, PhD, Assistant Professor
 Pineheiro, Marcio, MD, Clinical Assistant Professor
 Plaut, S. Michael, PhD, Associate Professor
 Prugh, Patricia, Clinical Assistant Professor
 Purcell, Penelope, Clinical Assistant Professor
 Quigley, Joan, Faculty Research Assistant
 RachBeisel, Jill, MD, Medical School Assistant Professor
 Raphael, Ralph, PhD, Clinical Assistant Professor
 Rapoport, Rosalie, Clinical Assistant Professor
 Rappoport, Jonas, MD, Clinical Professor
 Raskin, Allen, PhD, Research Professor
 Rath, Frank H., Jr., PhD, Clinical Assistant Professor
 Raymond, Linda, MD, Clinical Assistant Professor
 Raymond, Roberta, Research Associate
 Regan, Bruce, MD, Clinical Assistant Professor
 Richardson, Charles M., MD, Instructor
 Ridgely, M. Susan, Research Associate
 Rixey, Sallie, MD, Clinical Assistant Professor
 Roberts, Paul, MD, Clinical Assistant Professor
 Roberts, Rosalinda, PhD, Research Assistant Professor
 Robinson, Betty, MD, Clinical Associate Professor
 Romeyn, Heike, Faculty Research Assistant
 Rose, Deborah, MD, Clinical Assistant Professor
 Ross, David E., MD, Research Fellow
 Rubin, Jeffrey, Instructor
 Rudnick, Barry F., MD, Clinical Assistant Professor
 Ruskin, Paul, MD, Clinical Associate Professor
 Rutter, Allan, Faculty Research Assistant

Saidel, Donald H., PhD, Clinical Assistant Professor
 Sakles, Constantine J., MD, Medical School Professor
 Samaranayake, MD, Silverine, Instructor
 Sandler, Lawrence, MD, Clinical Assistant Professor
 Sarles, Richard, MD, Clinical Professor
 Sarno, Carla, MD, Medical School Assistant Professor
 Scally, Patrick, Clinical Assistant Professor
 Scanlon, Ann M., Clinical Assistant Professor
 Schmitt, Rosemary, Research Associate
 Schnaper, Nathan, MD, Clinical Professor
 Schreder, Richard, PhD, Clinical Assistant Professor
 Schwarcz, Robert, PhD, Research Professor
 Schwartz, Eugene, Clinical Assistant Professor
 Schwartz, Robert P., MD, Medical School Assistant Professor
 Senanayake, Edward, MBBS, Clinical Assistant Professor
 Shapiro, Marlene, Research Associate
 Sharfstein, Stephen, MD, Clinical Professor
 Shepard, Paul, PhD, Research Assistant Professor
 Shirakawa, Osamu, PhD, Research Associate
 Siegel, Brian, PhD, Clinical Assistant Professor
 Siegel, Madelyn J., MD, Clinical Assistant Professor
 Silver, Stuart B., MD, Clinical Assistant Professor
 Smith, James E., II, MD, Instructor
 Smith, Richard M., MD, Instructor
 Snyder, Kristin, Research Associate
 Sokal, Dina, MD, Clinical Assistant Professor
 Solounias, Bernadette, MD, Medical School Assistant Professor
 Spector, Jack, PhD, Clinical Assistant Professor
 Spier, Scott, MD, Clinical Assistant Professor
 Spital, Martha, Instructor
 Spodak, Michael, MD, Clinical Assistant Professor
 Steinbach, Irvin, Instructor
 Steinberg, John, MD, Clinical Assistant Professor
 Storch, Daniel, MD, Clinical Assistant Professor
 Strahan, Susan T., MD, Clinical Assistant Professor
 Styrt, Jerome, MD, Clinical Associate Professor
 Summerfelt, Ann, Instructor
 Taghezadeh, Fereidoon, MD, Clinical Assistant Professor
 Talbott, John A., MD, Professor and Chairman
 Tamminga, Carol, MD, Research Professor
 Tarazi, Fahny, Faculty Research Assistant
 Taylor, Jeffrey, Faculty Research Assistant
 Taylor, Ronald J., MD, Adjunct Assistant Professor
 Tellefsen, Christiane, MD, Clinical Assistant Professor
 Tepper, Vicki, PhD, Instructor

Thaker, Gunvant, MD, Research Assistant Professor
 Thompson, James, MD, Medical School Associate Professor
 Tiegel, Stuart, Medical School Assistant Professor
 Twery, Michael, PhD, Research Assistant Professor
 Ulgur, Ulku, MD, Clinical Assistant Professor
 Urbanska, Ewa, PhD, Fellow
 Varghese, Raju, EdD, Clinical Associate Professor
 Vimalananda, Meenaksho, MD, Instructor
 Vogel, Michael, PhD, Research Assistant Professor
 VonMuehlen, Lutz H., MD, Clinical Assistant Professor
 Waltos, David L., MD, Clinical Assistant Professor
 Waltrip, Royce, II, MD, Research Assistant Professor
 Warfel, Dale, Research Associate
 Warres, Neil, MD, Clinical Assistant Professor
 Waters, Rachel, Faculty Research Assistant
 Weinberg, Naimah, MD, Clinical Assistant Professor
 Weinstein, Stanley E., PhD, Clinical Associate Professor
 Weintraub, Eric, MD, Instructor
 Weintraub, Walter, MD, Clinical Professor
 Weist, Mark, PhD, Medical School Assistant Professor
 White, Robert K., Clinical Assistant Professor
 Wimmer, William, MD, Clinical Assistant Professor
 Wood, Frank, PhD, Research Professor
 Woody, Robert C., MD, Associate Professor
 Work, Henry, MD, Clinical Professor
 Wu, Hui-Qiu, PhD, Clinical Instructor
 Zhang, Xuehai, PhD, Fellow
 Ziesat, Harold, PhD, Adjunct Associate Professor

Department of Radiation Oncology

Professor and Chairman

Omar M. Salazar, MD

Amin, Pradip P., MD, Assistant Professor
 Balcer-Kubiczek, PhD, Elizabeth K., Associate Professor
 Bhandare, Niranjan S., Instructor
 Eddy, Hubert A., PhD, Research Associate Professor
 Harrison, George H., PhD, Associate Professor
 Jacobs, Maria C., MD, Assistant Professor
 Lei, Tianhu, PhD, Instructor
 Liberman, Fishel Z., MD, PhD, Assistant Professor
 Poussin-Rosillo, Hipolito, MD, School Associate Professor
 Renner, W. Dean, Assistant Professor
 Rhee, Juong G., PhD, Assistant Professor
 Salazar, Omar M., MD, Professor and Chairman

Sewchand, Wilfred, ScD, Professor
Slawson, Robert G., MD, School Associate Professor
Strohl, Roberta A., School Associate Professor

Department of Surgery

Professor and Chairman
Anthony L. Imbembo, MD

Division of General Surgery

Professor and Head
Anthony L. Imbembo, MD (chairman)

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Hull, Harry C., MD
Yeager, George H., MD

Badder, Elliott M., MD, Associate Professor
Bailey, Robert W., MD, Assistant Professor
Bartlett, Stephen T., MD, Associate Professor
Bouchelle, William H., MD, Clinical Instructor
Brunner, Martha J., PhD, Assistant Professor
Buchbinder, Dale, MD, Clinical Professor
Burdick, James F., MD, Clinical Assistant Professor
Carlson, Drew E., PhD, Associate Professor
Clark, Francis A., Jr., MD, Clinical Assistant Professor
Cox, Everard F., MD, Clinical Associate Professor
Cushing, Brad M., MD, Instructor
Darlington, Daniel N., PhD, Assistant Professor
DeMarco, Salvatore J., MD, Clinical Assistant Professor
Didolkar, Mukund S., MBBS, Associate Professor
Dunham, Carl M., MD, Assistant Professor
Elias, E. George, MD, PhD, Professor
Evans, John A., PhD, Assistant Professor
Fitzpatrick, James L., MD, Assistant Professor
Flowers, John L., MD, Assistant Professor
Gann, Donald S., MD, Professor and Associate Chairman
Gelber, Rene L., MD, Clinical Assistant Professor
Gens, David R., MD, Assistant Professor
Graham, Scott M., MD, Assistant Professor
Gudwin, Arthur L., MD, Clinical Assistant Professor
Hall, Gregory M., MD, Clinical Instructor
Harrison, Miles G., Jr., MD, Clinical Assistant Professor
Imbembo, Anthony L., MD, Professor and Chairman
Jepsen, Stephen J., MD, Assistant Professor
King, A. Daniel, Jr., MD, Clinical Assistant Professor

Lefor, Alan T., MD, Assistant Professor
Lerman, Sheldon H., MD, Clinical Instructor
Lilly, Michael P., MD, Assistant Professor
Levine, Hilbert M., MD, Clinical Assistant Professor
Macon, William L., MD, Clinical Associate
Militello, Philip R., MD, Assistant Professor
Minken, Stanley L., MD, Clinical Assistant Professor
Mir, Sidney S., MD, Clinical Associate Professor
Moore, Valerie, MD, Clinical Instructor
Munster, Andrew M., MD, Clinical Associate Professor
Myers, Roy A.M., MD, Assistant Professor
Novin, Neil, MD, Clinical Associate Professor
Ramsey, Harold E., MD, Clinical Instructor
Ramzy, Ameen I., MD, Assistant Professor
Raneri, Anthony J., MD, Clinical Assistant Professor
Rodriguez, Aurelio, MD, Assistant Professor
Schnaper, Lauren A., MD, Assistant Professor
Schweitzer, Eugene J., MD, Assistant Professor
Scovill, William A., MD, Associate Professor
Siegel, John H., MD, Professor
Simpkins, Cuthbert O., MD, Assistant Professor
Singer, John A., MD, Clinical Assistant Professor
Smith, Gardner W., MD, Clinical Professor
Smith, Thomas R., MD, Assistant Professor
Soderstrom, Carl A., MD, Assistant Professor
Stump, Kyle C., DVM, Assistant Professor
Szczyplinski, Adam F., MD, Clinical Assistant Professor
Tortolani, Edmund C., MD, Clinical Assistant Professor
Vachon, Debra A., MD, Clinical Instructor
Wiles, Charles E., MD, Assistant Professor
Wilkinson, Malcolm G., MD, Clinical Instructor
Williams, G. Melville, MD, Clinical Professor
Zucker, Karl A., MD, Associate Professor

Division of Emergency Medicine

Associate Professor and Head

Robert A. Barish, MD

Barish, Robert A., MD, Associate Professor and Head
Bolgiano, Edward B., MD, Assistant Professor
Browne, Brian J., MD, Assistant Professor
Chambers, Camille J., MD, Instructor
Cotto-Cumba, Cynthia, MD, Instructor
Devine, Kathleen A., MD, Instructor
Doherty, Robert J., MD, Instructor

D'Orta, James A., MD, Clinical Instructor
Gaasch, Wade R., MD, Assistant Professor
Groleau, Georgina A., MD, Assistant Professor
Jerrard, David A., MD, Assistant Professor
Joffee, Steven L., MD, Clinical Instructor
Kostrubiak, Roman G., MD, Instructor
McPherson, Scott J., MD, Instructor
Mysko, William K., DO, Clinical Assistant Professor
Olshaker, Jonathan S., MD, Assistant Professor
Perpall, Arthur E., Jr., MD, Assistant Professor
Pimentel, Laura, MD, Assistant Professor
Rorison, David G., MD, Clinical Assistant Professor
Trommer, Lori L., MD, Instructor
Tso, Elizabeth L., MD, Assistant Professor
Whye, DePriest W., Jr., MD, Clinical Assistant Professor
Winston, Reed A., MD, PhD, Clinical Assistant Professor

Division of Neurological Surgery

Associate Professor and Acting Head
Walker L. Robinson, MD

Professors Emeritus

Arnold, James G., MD
Mosberg, William H., Jr., MD
Thompson, Raymond K., MD

Abbott, J. Douglas, MD, Clinical Instructor
Abdo, Hatem S., MBBCh, Clinical Instructor
Broadwell, Richard D., PhD, Professor
Cook, David M., MD, Clinical Instructor
Ducker, Thomas B., MD, Clinical Professor
Ebert, Paul S., PhD, Research Associate
Fiandaca, Massimo S., MD, Assistant Professor
Geisler, Fred H., MD, PhD, Clinical Assistant Professor
Hennessy, Robert G., MD, Clinical Instructor
Jamaris, Joseph K., MD, Clinical Instructor
Knoller, Nachshon, MD, Visiting Assistant Professor
Lancellotta, Charles J., MD, Clinical Assistant Professor
Layne, Edward D., MD, Clinical Instructor
Meyer, Paul D., MD, Clinical Instructor
Ordonez, Jorge R., MD, Clinical Instructor
Rigamonti, Daniele, MD, Associate Professor
Robinson, Walker L., MD, Associate Professor and Acting Head
Russo, G. Lee, MD, Clinical Assistant Professor
Salcman, Michael, MD, Professor

Sestokas, Anthony K., PhD, Assistant Professor
Shuey, Henry M., Jr., MD, Clinical Instructor
Sitaras, Panayiotis L., MD, Clinical Instructor
Soliman, Joseph A., MD, Clinical Assistant Professor
Watts, Clark, MD, Professor
Weiner, Israel H., MD, Clinical Assistant Professor
Wolf, Aizik L., MD, Assistant Professor

Division of Orthopaedic Surgery

Professor and Head
John E. Kenzora, MD

Abrams, Robert C., MD, Clinical Associate Professor
Apostolo, Paul M., MD, Clinical Assistant Professor
Bathon, Howard G., MD, Assistant Professor
Baugher, William H., MD, Clinical Assistant Professor
Becker, Larry, MD, Clinical Assistant Professor
Belkoff, Stephen M., PhD, Assistant Professor
Bosse, Michael, MD, Associate Professor
Brumback, Robert J., MD, Associate Professor
Burgess, Andrew R., MD, Assistant Professor
Ciotola, Joseph A., MD, Clinical Instructor
Cohen, Philip M., DPM, Clinical Instructor
Copeland, Carol E., MD, Assistant Professor
DeSilva, Jivaka B., MBBS, Clinical Instructor
Diamond, Eric L., DPM, Clinical Associate
Diamond, Liebe S., MD, Clinical Associate Professor
Edwards, Charles C., MD, Professor
Eglseder, W. Andrew, MD, Assistant Professor
Ellis, Michael A., MD, Clinical Assistant Professor
Engh, Charles A., MD, Clinical Assistant Professor
Engh, Gerard A., MD, Clinical Assistant Professor
Friedler, Stanley, MD, Clinical Assistant Professor
Gillespie, Thomas E., MD, Assistant Professor
Greenstein, George H., MD, Clinical Assistant Professor
Herzenberg, John E., MD, Associate Professor
House, Homer C., MD, Clinical Assistant Professor
Jinnah, Riyaz H., Clinical Assistant Professor
Kenzora, John E., MD, Professor and Head
Lenet, Marc D., DPM, Clinical Assistant Professor
Levine, Alan M., MD, Professor
Matz, Samuel O., MD, Clinical Instructor
McConnell, Jeffrey R., MD, Clinical Instructor
Michael, Roger H., MD, Clinical Associate Professor
Murphy, James C., MD, Clinical Instructor

Paley, Dror, MD, Associate Professor
Poka, Attila, MD, Assistant Professor
Reichmeister, Jerome P., MD, Clinical Associate Professor
Rosenthal, Mark S., MD, Clinical Instructor
Schmeisser, Gerhard, Jr., MD, Clinical Associate Professor
Sherman, Michael M., DPM, Clinical Assistant Professor
Simmons, Shelton C., III, DMD, MD, Clinical Instructor
Smulyan, William I., MD, Clinical Instructor
Sothoron, W. Haddox, MD, Clinical Assistant Professor
Spence, Kenneth F., MD, Clinical Instructor
Sydney, Sam V., MBBS, Clinical Instructor
Tansey, John J., MD, Clinical Associate Professor
Tetsworth, Kevin D., MD, Assistant Professor
Whitten, Thomas V., MD, Clinical Instructor
Zadek, Robert E., MD, Clinical Associate Professor

Division of Otolaryngology

Associate Professor and Acting Head
William C. Gray, MD

Professor Emeritus
Blanchard, Cyrus L., MD

Appleton, James R., MD, Clinical Associate
Baker, Dole P., MD, Clinical Assistant Professor
Bialostozky, Franklin M., Clinical Assistant Professor
Biedlingmaier, John F., MD, Assistant Professor
Blum, Stanley L., MD, Clinical Instructor
Cantrell, Harry, MD, Assistant Professor
Cicci, Regina L., PhD, Assistant Professor
Clayton, Marco, MD, PhD, Clinical Instructor
Cosentino, Enzo, MD, Clinical Assistant Professor
Engnoth, Milton L., MD, Clinical Instructor
Fletcher, Margaret M., MD, Clinical Associate Professor
Gray, William C., MD, Associate Professor and Acting Head
Hammond, Anthony F., MD, Clinical Instructor
Hazell, Jonathan W.P., MBBChir, Visiting Professor
Jastreboff, Malgorzata M., PhD, Assistant Professor
Jastreboff, Pawel J., PhD, Professor
Leveque, Hubert, MD, Clinical Assistant Professor
Nachlas, N. Edward, MD, Clinical Assistant Professor
Ominsky, Barry E., MD, Clinical Assistant Professor
Pardo, Juan, MD, Clinical Instructor
Rosen, Jed S., MD, Assistant Professor
Sawyer, Robert, MD, Associate Professor

Steiner, Albert, MD, Clinical Assistant Professor
Suter, Charles M., PhD, Assistant Professor
Toner, Thomas J., Jr., MD, Clinical Instructor
Won, Jong H., MD, Clinical Associate

Division of Plastic and Reconstructive Surgery

Associate Professor and Head

Nelson H. Goldberg, MD

Armiger, William G., MD, Clinical Associate
Ballesteros, Reuben F., MD, Clinical Assistant Professor
Carlton, James M., MD, Assistant Professor
Chow, Jimmy A., MD, Clinical Assistant Professor
Clark, Norman L., MD, Assistant Professor
Crawley, William A., MD, DDS, Clinical Instructor
Dufresne, Craig R., MD, Clinical Assistant Professor
Franks, Denis, MD, Clinical Associate
Goldberg, Nelson H., MD, Associate Professor and Head
Grace, George T., MD, Clinical Assistant Professor
Hirata, Richard M., MD, Clinical Assistant Professor
Hoopes, John E., MD, Clinical Professor
Manson, Paul N., MD, Clinical Associate Professor
Mayer, Michael H., MD, Clinical Instructor
McClinton, Michael A., MD, Clinical Assistant Professor
Orlando, Joseph C., MD, Clinical Assistant Professor
Plasse, Jerome S., MD, Clinical Assistant Professor
Ramirez, Oscar M., MD, Clinical Assistant Professor
Saunders, John R., Jr., MD, Clinical Assistant Professor
Slezak, Sheri, MD, Assistant Professor
Spence, Robert J., MD, Clinical Assistant Professor
Vanderkolk, Craig, MD, Assistant Professor
Weiss, Alan J., MD, Clinical Instructor
Wilhelmsen, Hans R., MD, Clinical Assistant Professor

Division of Surgical Services for Infants and Children

Professor and Head

J. Laurance Hill, MD

Beaver, Bonnie L., MD, Assistant Professor
Buck, James R., DVM, MD, Clinical Assistant Professor
Colombani, Paul M., MD, Clinical Assistant Professor
Dudgeon, David L, MD, Clinical Associate Professor
Haller, J. Alex, Jr., MD, Clinical Professor
Hill, J. Laurance, MD, Professor and Head
Voigt, Roger, W., MBBCh, Assistant Professor

Division of Thoracic and Cardiovascular Surgery

Professor and Head

Joseph S. McLaughlin, MD

Attar, Safuh, MD, Professor

Foster, Andrew H., MD, Assistant Professor

Krasna, Mark J., MD, Assistant Professor

Laschinger, John C., MD, Assistant Professor

Leacock, Ferdinand S., MD, Clinical Associate

McLaughlin, Joseph S., MD, Professor and Head

Mech, Karl F., Jr., MD, Clinical Instructor

Sell, Jeffrey E., MD, Clinical Assistant Professor

Sequeira, Alejandro J., MD, Assistant Professor

Turney, Stephen Z., MD, Associate Professor

Division of Urology

Professor and Head

Stephen C. Jacobs, MD

Professor Emeritus

Young, John D., Jr., MD

Applestein, Marc B., MD, Clinical Instructor

Berger, Bruce W., MD, Clinical Assistant Professor

Bergmann, Frederick G., MD, Clinical Instructor

Bezirdjian, Lawrence C., MD, Clinical Assistant Professor

Brodie, Ray, Jr., MD, Clinical Instructor

Brown, Michael W., MD, Clinical Instructor

Busky, Stephen M., MD, Clinical Instructor

Campbell, Edward W., Jr., MD, Associate Professor

Cohen, Stephen P., MD, Clinical Associate Professor

Dhanda, Anand M., MBBS, Clinical Instructor

Epstein, Edwin S., MD, Clinical Instructor

Gearhart, John P., MD, Clinical Instructor

Gessler, Robert A., MD, Clinical Instructor

Howard, Ralph M., MD, Clinical Assistant Professor

Jacobs, Stephen C., MD, Professor and Head

Jaskulsky, Stephen R., MD, Clinical Instructor

Jeffs, Robert D., MD, Adjunct Professor

Kalash, Suhayl S., MD, Clinical Associate Professor

Kaplan, Harold J., MD, Clinical Assistant Professor

Kramer, Howard C., Jr., MD, Clinical Assistant Professor

Kyprianou, Natasha, PhD, Assistant Professor

Lerner, Brad D., MD, Clinical Instructor

Naslund, Michael J., MD, Assistant Professor

Patel, Shashikant S., MD, Clinical Instructor
 Shaw-Taylor, Kofi E., MBCHB, Clinical Instructor
 Shpritz, Louis A., MD, Clinical Assistant Professor
 Singh, Bhupinder, MBBS, Clinical Instructor

Residency Appointments – Class of 1991

Adam, Rony	University of Maryland Medical System Baltimore, Maryland	Obstetrics and Gynecology
Aklilu, Yared	Baystate Medical Center Springfield, Massachusetts	Medicine/Pediatrics
Albaran, Renato	Wayne State University Detroit Medical Center Detroit, Michigan	Surgery
Arvanaghi, Babak	George Washington University Washington, D. C.	Internal Medicine
	George Washington University Washington, D. C.	Anesthesiology
Ault, Michael	Mercy Medical Center Baltimore, Maryland	Medicine
	McGaw Medical Center Northwestern University Chicago, Illinois	Anesthesiology
Awalt, Kathleen	University of Maryland Medical System Baltimore, Maryland	Pediatrics
Baker, Brett	Barnes Hospital St. Louis, Missouri	Internal Medicine
Beaudet, Lisa	Year Off	
Berg, Eric	York Hospital York, Pennsylvania	Internal Medicine
Berne, Jordan	University of Virginia Charlottesville, Virginia	Pathology

Bridgman, Sally	Greater Baltimore Medical Center Baltimore, Maryland	Internal Medicine
	University of Maryland Medical System Baltimore, Maryland	Radiation Oncology
Brown, Karen	Yale-New Haven Hospital New Haven, Connecticut	Internal Medicine
Browne, Susan	Stanford Affiliated Hospitals Stanford, California	Transitional
	Stanford Affiliated Hospitals Stanford, California	Anesthesiology
Browning, Scott	Wilford Hall USAF Medical Center Lackland Air Force Base San Antonio, Texas	Surgery
Buch, Barbara	Union Memorial Hospital Baltimore, Maryland	Surgery-Preliminary
Burlay, Anthony	University of Maryland Medical System Baltimore, Maryland	Psychiatry
Capacio, Elizabeth	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
Cardinale, Robert	Greater Baltimore Medical Center Baltimore, Maryland	Internal Medicine
	Johns Hopkins Hospital Baltimore, Maryland	Radiation Oncology
Cazes, Elliot	University of Maryland Medical System Baltimore, Maryland	Obstetrics and Gynecology
Chamrova, Zuzana	University of Maryland Medical System Baltimore, Maryland	Diagnostic Radiology
Chan, Arlene	University of Michigan Hospital Ann Arbor, Michigan	Family Practice
Chisholm, Christian	University of Maryland Medical System Baltimore, Maryland	Obstetrics and Gynecology
Chou, Chungchieh (Dan)	Maryland General Hospital Baltimore, Maryland	Transitional
	George Washington University Washington, D. C.	Anesthesiology
Chung, Theodore	Sinai Hospital of Baltimore Baltimore, Maryland	Internal Medicine

	Johns Hopkins Hospital Baltimore, Maryland	Radiation Oncology
Clark, Brenda Jill	University of Texas Medical School Houston, Texas	Internal Medicine
Cockey, George	University of Florida Medical Center Gainesville, Florida	Internal Medicine
Collector, Daniel	University of Maryland Medical System Baltimore, Maryland	Family Practice
Curry, Valerie	Medical College of Virginia Richmond, Virginia	Pediatrics
Davidoff, Stephanie	McLean Hospital Belmont, Massachusetts	Psychiatry
Diamond, Beth	Yale-New Haven Hospital New Haven, Connecticut	Pediatrics
Dias, Michael	University of Maryland Medical System Baltimore, Maryland	Surgery-ENT
Dillon, Paul	Howard University Hospital Washington, D. C.	Surgery
Dominitz, Jason	Duke University Medical Center Durham, North Carolina	Internal Medicine
Donegan, Robert	Wilford Hall USAF Medical Center Lackland Air Force Base San Antonio, Texas	Internal Medicine
Dwyer, Mark	Union Memorial Hospital Baltimore, Maryland	Internal Medicine
	Morristown Memorial Hospital Morristown, New Jersey	Diagnostic Radiology
Ehrreich, Steven	Duke University Medical Center Durham, North Carolina	Pediatrics
Einhorn, Nicole	University of Medicine and Dentistry of New Jersey Robert Wood Johnson Piscataway, New Jersey	Orthopaedics
Elasz, Tom	University of Colorado School Medicine Denver, Colorado	Internal Medicine
Epstein, Laura	University of Florida-Shands Hospital Gainesville, Florida	Pediatrics

Ferouz, Fazeela	Thomas Jefferson University Philadelphia, Pennsylvania	Internal Medicine
Feuer, Adine	Medical College of Wisconsin Milwaukee, Wisconsin	Urology
Foxman, Jan	Johns Hopkins Hospital Baltimore, Maryland	Emergency Medicine
Friedman, Robert	York Hospital York, Pennsylvania	Transitional
	Maryland General Hospital Baltimore, Maryland	Ophthalmology
Fritz, Kelly	University of Maryland Medical System Baltimore, Maryland	Surgery
Frucht, Madeline	University of Connecticut Farmington, Connecticut	Family Practice
Futterer, Stephen	McGaw Medical Center Chicago, Illinois	Internal Medicine
	University of Virginia Charlottesville, Virginia	Diagnostic Radiology
Gilmour, Sarah	St. Margaret Memorial Pittsburgh, Pennsylvania	Family Practice
Goldenberg, David	University of North Carolina Chapel Hill, North Carolina	Pediatrics
	Yale-New Haven Hospital New Haven, Connecticut	Psychiatry
Goodfriend, David	Harbor Hospital Center Baltimore, Maryland	Transitional
Greenhouse, Stephen	George Washington University Washington, D. C.	Surgery-Preliminary
Grosvenor, Eugene	University of Maryland Medical System Baltimore, Maryland	Surgery-Preliminary
Guarda, Angela	Johns Hopkins Hospital Baltimore, Maryland	Psychiatry
Gupta, Vikas	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
Hamet, Marc	University of Maryland Medical System Baltimore, Maryland	Diagnostic Radiology

Haris, Evelyn	Francis Scott Key Medical Center Baltimore, Maryland	Internal Medicine
Hedrick, Eric	Boston City Hospital Boston, Massachusetts	Internal Medicine
Hickey, Thomas	Naval Medical Center Oakland, California	Pediatrics
Hollywood, Jennifer	Moses H. Cone Memorial Hospital Greensboro, North Carolina	Family Practice
Iglesia, Cheryl	University of Florida Health Sciences Center Jacksonville, Florida	Obstetrics and Gynecology
Jenkins, Chuka	Catholic Medical Center Jamaica, New York	Obstetrics and Gynecology
Kaifer, Marie	University of Maryland Medical Center Baltimore, Maryland	Pediatrics
Kale, Karen	University of Maryland Medical Center Baltimore, Maryland	Pediatrics
Kehoe, Theresa	Dartmouth-Hitchcock Hanover, New Hampshire	Internal Medicine
Kelly, Patrick	New England Medical Center Boston, Massachusetts	Pediatrics
Kelso, Thomas	Portsmouth Naval Hospital Portsmouth, Virginia	Surgery
Kim, Joohyong	University of Maryland Medical Center Baltimore, Maryland	Surgery-Preliminary
	West Virginia University Charleston, West Virginia	Urology
Kim, Suel	George Washington University Washington, D. C.	Internal Medicine
Kirson, Joel	Mt. Sinai Hospital New York, New York	Psychiatry
Klug, Robert	University of Maryland Medical Center Baltimore, Maryland	Internal Medicine
	George Washington University Washington, D. C.	Emergency Medicine
Kochmann, Kenneth	University of Maryland Medical System Baltimore, Maryland	Family Practice

Kohlepp, Elizabeth	University of Maryland Medical System Baltimore, Maryland	Psychiatry
Kramer, Matthew	Medical College of Virginia Richmond, Virginia	Anesthesiology
Lacy, Brian	Dartmouth-Hitchcock Hanover, New Hampshire	Internal Medicine
Lee, Brian	Union Memorial Hospital Baltimore, Maryland	Internal Medicine
	George Washington University Washington, D. C.	Anesthesiology
Lee, Susan	Georgetown University Hospital Washington, D. C.	Pediatrics
Lewis, Katherine	Georgetown University Hospital Washington, D. C.	Pediatrics
Maher, Kevin	Franklin Square Hospital Baltimore, Maryland	Obstetrics and Gynecology
Marschner, Richard	York Hospital York, Pennsylvania	Internal Medicine
	Penn State.—Hershey Hershey, Pennsylvania	Ophthalmology
Masin, Jeffrey	University Hospital of Cleveland Cleveland, Ohio	Surgery-ENT
Matthews, Lee Ann	University Hospital of Cleveland Cleveland, Ohio	Urology
Mello, Lorrie	Sinai Hospital of Baltimore Baltimore, Maryland	Pediatrics
Middleton, John	University of California— San Francisco/Fresno Fresno, California	Psychiatry
Mirarchi, Saverio	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
Moore, Wendy	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
Moshyedi, Arman	Geisinger Medical Center Danville, Pennsylvania	Diagnostic Radiology
Nasseri, Ali	Einstein/Montefiore Hospital Bronx, New York	Obstetrics and Gynecology

Nazarian, John	New York Hospital/Cornell Medical Center White Plains, New York	Psychiatry
Neal, Joyce	Medical University of South Carolina Charleston, South Carolina	Internal Medicine
Neustater, Brett	University of Florida/Shands Hospital Gainesville, Florida	Internal Medicine
Nguyen, Hong	York Hospital York, Pennsylvania	Internal Medicine
Niemeyer, Cynthia	University of Maryland Medical System Baltimore, Maryland	Pediatrics
Noorani, Robert	Union Memorial Hospital Baltimore, Maryland	Internal Medicine
	University of Maryland Medical System Baltimore, Maryland	Anesthesiology
Nussbaum, Eric	University of Minnesota Minneapolis, Minnesota	Neurosurgery
O'Mahony, Janet	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
O'Rourke, James	Miriam Hospital Providence, Rhode Island	Internal Medicine
	Massachusetts General Hospital Boston, Massachusetts	Anesthesiology
Ozgun, Bertan	University of North Carolina Chapel Hill, North Carolina	Diagnostic Radiology
Ozgun, Erin	University of Alabama Birmingham, Alabama	Internal Medicine
Pabers, John	Contra Costa-California Martinez, California	Family Practice
Pagan, John	Albert Einstein Bronx, New York	Surgery
Pappas, Zinon	North Shore University Hospital Manhasset, New York	Internal Medicine
Pierce, Martha	George Washington University Washington, D. C.	Internal Medicine
Pikus, Harold	Dartmouth-Hitchcock Hanover, New Hampshire	Neurosurgery

Pomerantz, David	Roger Williams Providence, Rhode Island	Internal Medicine
Porter, Mary	University of Maryland Medical System Baltimore, Maryland	Pediatrics
Poulton, James	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
Pryzlepa, Kelly	St. Christopher's Philadelphia, Pennsylvania	Pediatrics
Puglisi, Roberto	University of Medicine and Dentistry of New Jersey Robert Wood Johnson Camden, New Jersey	Surgery
Rainer, Robert	Brooklyn Hospital Brooklyn, New York	Obstetrics and Gynecology
Rubelmann, Douglas	York Hospital York, Pennsylvania	Family Practice
Schoedel, Christianne	Mercy Medical Center Baltimore, Maryland	Internal Medicine
	University of Maryland Medical Center Baltimore, Maryland	Ophthalmology
Schweitzer, Michael	University Hospital of Cleveland Cleveland, Ohio	Surgery
Shaikh, Arooj	University of South Carolina Charleston, South Carolina	Diagnostic Radiology
Shepp, Linda	Greater Baltimore Medical Center Baltimore, Maryland	Internal Medicine
	Stony Brook Hospital-SUNY Stony Brook, New York	Diagnostic Radiology
Shiber, Susan	Mercy Medical Center Baltimore, Maryland	Internal Medicine
	Johns Hopkins Hospital Baltimore, Maryland	Anesthesiology
Silver, Dana	University Hospital of Cleveland Cleveland, Ohio	Pediatrics
Simmons, Leslie	Howard University Washington, D. C.	Pediatrics
Simpson, David	New England Medical Center Boston, Massachusetts	Orthopaedics

Smiddy, Linda	Mercy Medical Center Baltimore, Maryland	Internal Medicine
	Johns Hopkins Hospital Baltimore, Maryland	Anesthesiology
Smith, Kelly	York Hospital York, Pennsylvania	Internal Medicine
Sokal, Joseph	Sheppard Pratt Hospital Baltimore, Maryland	Psychiatry
Spalding, Howard	University of Florida-Shands Hospital Gainesville, Florida	Pediatrics
Srivastava, Shakti		Research
Sugden, Anne	Franklin Square Hospital Baltimore, Maryland	Family Practice
Taragin, David	Mt. Sinai Hospital Miami Beach, Florida	Internal Medicine
	Albert Einstein Bronx, New York	Neurology
Tate, Jason	Franklin Square Hospital Baltimore, Maryland	Family Practice
Thomas, Ralph	Mercy Medical Center Baltimore, Maryland	Internal Medicine
	Thomas Jefferson University Philadelphia, Pennsylvania	Anesthesiology
Todd, William	University of Maryland Medical System Baltimore, Maryland	Emergency Medicine
Tom, Timothy	University of California-Irvine Orange, California	Internal Medicine
	University of Maryland Medical System Baltimore, Maryland	Anesthesiology
Ton-That, Han	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
Ulma, George	Kaiser Permanente Oakland, California	Internal Medicine
	University of Washington Seattle, Washington	Anesthesiology
VanBeneden, Chris	University of Florida-Shands Hospital Gainesville, Florida	Internal Medicine

Vennos, Andrew	University of Maryland Medical System Baltimore, Maryland	Internal Medicine
Warden, Marjorie	Mercy Medical Center Baltimore, Maryland	Internal Medicine
	University of Maryland Medical System Baltimore, Maryland	Ophthalmology
Watkins, Patricia	Year Off	
	George Washington University (1992) Washington, D. C.	Pathology
Weingold, Daniel	George Washington University Washington, D. C.	Surgery
	George Washington University Washington, D. C.	Orthopaedics
Weintraub, Daniel	University of Maryland Medical System Baltimore, Maryland	Psychiatry
Whiteford, Mark	Thomas Jefferson University Philadelphia, Pennsylvania	Surgery-Preliminary
Williams, Arthur	Medical College of Pennsylvania Philadelphia, Pennsylvania	Internal Medicine
Wright, Leon	Medical College of Virginia Richmond, Virginia	Surgery-Preliminary
Wymer, James	Strong Memorial Hospital Rochester, New York	Internal Medicine
Yi, Sok	Washington Hospital Center Washington, D. C.	Internal Medicine
Young, Cecilia	Barnes Hospital St. Louis, Missouri	Internal Medicine
Zapas, John	Washington Hospital Center Washington, D. C.	Surgery

University Policy Statements

FACULTY, STUDENT AND INSTITUTIONAL RIGHTS AND RESPONSIBILITIES FOR ACADEMIC INTEGRITY

Preamble

The academic enterprise is characterized by reasoned discussion between student and teacher, a mutual respect for the learning and teaching process, and intellectual honesty in the pursuit of new knowledge. By tradition, students and teachers have certain rights and responsibilities which they bring to the academic community. While the following statements do not imply a contract between the teacher or the institutions and the student, they are nevertheless conventions which should be central to the learning and teaching process.

Faculty Rights and Responsibilities

1. Faculty members shall share with students and administrators the responsibility for academic integrity.
2. Faculty members shall enjoy freedom in the classroom to discuss all subject matter reasonably related to the course. In turn they have the responsibility to encourage free and honest inquiry and expression on the part of students.
3. Faculty members, consistent with the principles of academic freedom, have the responsibility to present courses that are consistent with their descriptions in the catalog of the institution. In addition, faculty members have the obligation to make students aware of the expectations in the course, the evaluation procedures, and the grading policy.
4. Faculty members are obligated to evaluate students fairly, equitably and in a manner appropriate to the course and its objectives. Grades shall be assigned without prejudice or bias.
5. Faculty members shall make all reasonable efforts to prevent the occurrence of academic dishonesty through appropriate design and administration of assignments and examination, careful safeguarding of course materials and examinations, and regular reassessment of evaluating procedures.
6. When instances of academic dishonesty are suspected, faculty members shall have the responsibility to see that appropriate action is taken in accordance with institutional regulations.

Student Rights and Responsibilities

1. Students share with faculty members and the administrators the responsibility for academic integrity.
2. Students have the right of free and honest inquiry and expression in their courses. In addition, students have the right to know the requirements of their courses and to know the manner in which they will be evaluated and graded.
3. Students have the obligation to complete the requirements of their courses in the time and manner prescribed and to submit their work for evaluation.
4. Students have the right to be evaluated fairly, equitably, and in a timely manner appropriate to the course and its objectives.
5. Students shall not submit as their own work any work which has been prepared by others. Outside assistance in the preparation of this work, such as librarian assistance, tutorial assistance, typing assistance or such special assistance as may be specified or approved by the appropriate faculty member, is allowed.
6. Students shall make all reasonable efforts to prevent the occurrence of academic dishonesty. They shall by their own example encourage academic integrity and shall themselves refrain from acts of cheating and plagiarism or other acts of academic dishonesty.
7. When instances of academic dishonesty are suspected, students shall have the right and responsibility to bring this to the attention of the faculty or other appropriate authority.

Institutional Responsibility

1. Constituent institutions of the University of Maryland System shall take appropriate measures to foster academic integrity in the classroom.
2. Each institution shall take steps to define acts of academic dishonesty, to ensure procedures for due process for students accused or suspected of acts of academic dishonesty, and to impose appropriate sanctions on students found to be guilty of acts of academic dishonesty.
3. Students expelled or suspended for reasons of academic dishonesty by an institution in the University of Maryland System shall not be admissible to any other System institution if expelled, or during any period of suspension.

*Approved, November 30, 1989 by the Board of Regents

DISCLOSURE OF STUDENT INFORMATION

In accordance with "The Family Education Rights and Privacy Act of 1974" (PL93-380), popularly referred to as the "Buckley Amendment," privacy of student records is assured. Specifically, the act provides for the student's access to educational records maintained by the school, challenge to content of the records and control of disclosure of the records. A full policy statement may be found in the current *UMAB Answer Book*, issued to all students.

DISCLAIMER

No provision of this publication shall be construed as a contract between any applicant or student and the University of Maryland. The university reserves the right to change any admission or advancement requirement at any time. The university further reserves the right to ask a student to withdraw at any time when it is considered to be in the best interest of the university.

Admission and curriculum requirements are subject to change without prior notice.

THE UNIVERSITY OF MARYLAND POSITION ON ACTS OF VIOLENCE AND EXTREMISM WHICH ARE RACIALLY, ETHNICALLY, RELIGIOUSLY OR POLITICALLY MOTIVATED

The Board of Regents strongly condemns criminal acts of destruction or violence against the person or property of others. Individuals committing such acts at any campus or facility of the university will be subject to swift campus judicial and personnel action, including possible expulsion or termination, as well as possible state criminal proceedings.

SERVICE TO THOSE WITH INFECTIOUS DISEASES

It is the policy of the University of Maryland at Baltimore to provide education and training to students for the purpose of providing care and service to all persons. The institution will employ appropriate precautions to protect providers in a manner meeting the patients' or clients' requirements, yet protecting the interest of students and faculty participating in the provision of such care or service.

No student will be permitted to refuse to provide care or service to any assigned person in the absence of special circumstances placing the student at increased risk for an infectious disease. Any student who refuses to treat or serve an assigned person without prior consent of the school involved will be subject to penalties under appropriate academic procedures, such penalties to include suspension or dismissal.

HUMAN RELATIONS CODE SUMMARY

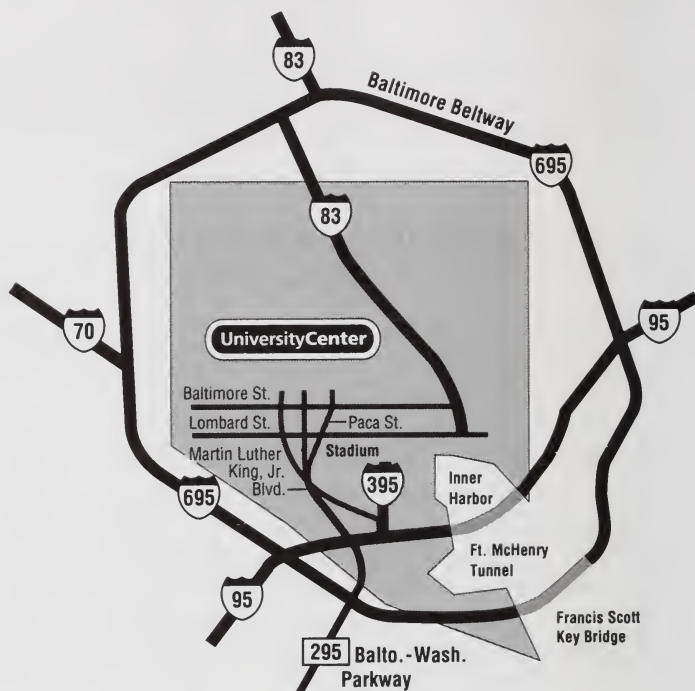
UMAB has a Human Relations Code for use by the entire campus community. The code represents UMAB's commitment to human relations issues. The specific purposes of the code include:

1. Prevention or elimination of unlawful discrimination on the basis of race, color, creed, sex, sexual orientation, marital status, age, ancestry or national origin, physical or mental handicap, or exercise of rights secured by the First Amendment of the U.S. Constitution; and
2. Establishing a timely, effective grievance procedure as an alternative to more lengthy formal processes for resolution of human relations issues.

A Human Relations Committee was created to oversee the code. It is comprised of campus faculty, administrators and students and is advisory to the president of the campus. The committee may institute educational programs and provide an open forum on human relations issues. In addition, the committee is charged with maintaining a mediation, investigation and hearing process for specific complaints of discrimination brought by students, faculty or staff. The code describes the particulars of the hearing process. It is the intent of the code to provide a grievance procedure for an individual on campus who wants a cross-section of the campus community to investigate and mediate a problem without having to resort to complaints to external agencies such as the Maryland Commission on Human Relations, complaints under personnel rules or lawsuits.

Copies of the Human Relations Code are available in the dean's office, the student affairs and USGA offices in the Baltimore Student Union, and the human resources management and affirmative action offices in the administration building.

Campus Maps



TO REACH THE CAMPUS

The University of Maryland at Baltimore is located in downtown Baltimore, six blocks west of the Inner Harbor.

Directions

From I-95: Take Rte. 395 (downtown Baltimore) and exit onto Martin Luther King, Jr., Blvd., staying in right lane. At fourth traffic light, turn right onto Baltimore St.; turn left at second traffic light onto Paca St.; turn right into the entrance for the Baltimore Grand Garage (Visitors Parking).

Bus Access

MTA buses numbered 1, 7, 8, 9, 11, 15, 20, 23, 30, 31, 35, 36 and 150 all stop in the campus area.

Subway Access

The Baltimore Metro runs from Charles Center to Owings Mills. Stops closest to campus are at Lexington Market and Charles Center.

Light Rail

A 21-mile light rail line connecting northern Baltimore County and BWI Airport opened in spring 1992. The University Center stop is at Howard and Redwood Streets.



VP Visitors Parking PP Patient Parking SP Student Parking

Academic and Patient Care Facilities

- 19 Administration Building
737 West Lombard Street
- 17 Allied Health Building
100 Penn Street
- 13 Athletic Center
646 Penn Street
- 12 Baltimore Student Union
621 West Lombard Street
- 37 Biomedical Research Building
108 North Greene Street
- 38 (Walter P.) Carter Center
630 West Fayette Street
- 7 Davidge Hall
522 West Lombard Street
- 31 Dental School
666 West Baltimore Street
- 22 Dunning Hall
636 West Lombard Street
- 8 East Hall
520 West Lombard Street
- 20 Environmental Health and Safety Building
714 West Lombard Street
- 1 James T. Frenkel Building
16 South Eutaw Street
- 6 Greene Street Building
29 South Greene Street
- 28 Health Sciences Facility (future)
- 10 Health Sciences Library
111 South Greene Street
- 42 Hope Lodge
636 West Lexington Street
- 26 Howard Hall
660 West Redwood Street
- 36 Information Services Building
100 North Greene Street
- 33 Law School and Marshall Law Library
500 West Baltimore Street
- 9 Lombard Building
511 West Lombard Street
- 35 Maryland Bar Center
520 West Fayette Street
- 18 Medical Biotechnology Center
(future home)
- 27 Medical School
Frank C. Bressler Research Building
655 West Baltimore Street
- 29 Medical School Teaching Facility
10 South Pine Street
- 15 Nursing School
655 West Lombard Street
- 24 Parsons Hall
622 West Lombard Street
- 40 Pascault Row
651-655 West Lexington Street
- 30 Pharmacy School
20 North Pine Street
- 41 Pine Street Police Station
214 North Pine Street
- 39 Ronald McDonald House
635 West Lexington Street
- 5 Social Work School
525 West Redwood Street
- 14 State Medical Examiner's Building
111 Penn Street
- 4 University Plaza
Redwood and Greene Streets
- 21 Western Health Center
700 West Lombard Street
- 23 Whitehurst Hall
624 West Lombard Street
- 2 405 West Redwood Street Building
16 701 West Pratt Street Building
- 11 University Health Center
120 South Greene Street
- 25 University of Maryland Medical System
22 South Greene Street
- 3 University of Maryland Physicians Building
419 West Redwood Street
- 32 Veterans Affairs Medical Center
Baltimore and Greene Streets

Cultural and Civic Facilities

- 46 Babe Ruth Baltimore Orioles Stadium
- 44 Lexington Market
- 43 Market Garden Park Office
- 40 Old Say's Park Cemetery
- 40 Old Say's Park Cemetery
- 34 Westminster Hall



UNIVERSITY OF MARYLAND
AT BALTIMORE